

GREAT LAKES TECHNOCRAT

25c

Volume III

Number 3

25c

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Illustrating the Futility of Price System Methods of Operation; Interpreting the Trend of Events from the Social Aspect of Science; and Presenting the Specifications for Total Victory in America's War Against Fascism.



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TECHNOCRACY DIGEST

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Peace, Will It Be Wonderful?

60,000,000 Horse Feathers

by Alice Langan

It is time for all Americans to realize that what most Americans are interested in is more goods and services and better goods and services. It is time for us to realize that this is the freedom we are fighting for. It is time for us to realize that we are fighting to keep out a system of operating where production is frozen at a level of scarcity in order to maintain the status quo, for the benefit of the few at the top at the expense of the many at the bottom.

If you are one of those who cling blindly to the faiths, beliefs and traditions of your ancestors, and ignore the future of your children and your children's children, you will not do anything about obtaining your birthright.

But if you are of **THAT** company which seeks the facts, and having measured those facts, accept them, you cannot do otherwise than to reach out for that **FREEDOM** which can be yours!

Don't Count Noses, Count Facts

One hundred and fifty years ago, or less, 98 percent of all the work done on this Continent was performed by human toil and hand tool methods, and only 2 percent was performed by the use of extraneous energy. Men and women toiled from dawn to dusk, and died young. To have opinions then about the method of doing work didn't interfere with operations much. Today, we have reversed that method of doing work, for only 2 percent, or less, of the work done is performed by human toil and hand tool methods, and 98 percent is done by extraneous energy. That 2 percent of human toil is accessory or attendant to the machine. To have opinions today about how to operate this complex technological equipment simply

interferes with its operation. On this Continent we no longer have any right to determine as a matter of opinion that which can be determined as a matter of fact.

Disemployment of human labor is a universal symptom of the introduction of technology. *Disemployment* is not to be confused with *unemployment*, for while unemployment indicates that the condition may at some time be alleviated, disemployment of human labor by the introduction of technology is a permanent thing. Human labor displaced by technology is never again needed in the particular field where that technology is introduced.

Ever since World War I, this displacement of human labor has been going on at a rapid rate, and today in this Total War we have witnessed

a tremendous acceleration of that trend, that displacement of man-hours by the installation of more and more technology.

End of the Line—All Off!

There are all kinds of examples of the displacement of man-hours of labor; just look around you; your own factory; even your own home. See how much more efficient work is performed by better machinery, better technology, automatic equipment, with less and less human beings employed.

The accelerated trend toward greater and greater displacement of man-hours, first observed at the end of World War I can best be understood by a few examples.

In 1918 the railroads, with 2,000,000 workers, hauled 405,000,000,000 ton-miles of freight. In 1943, 1,000,000 *LESS* workers hauled almost twice as much freight. One million workers had been permanently displaced by the introduction of new technology. That is the only way to produce more ton-miles of freight.

The United Mine Workers of America at a Convention in Cincinnati, September 17, 1944, viewed with apprehension the mechanization of mines and the consequent job shrinkage, with the reduced need for miners occurring at an alarming rate. In 1943, approximately ten million *more* tons of bituminous coal was produced with one-third *less* miners than were employed in 1918. That is the only way to produce more coal.

On the farms of America, more

than two million less workers are employed today than when the war began in 1941; yet food production in 1943 was 15 percent above 1942; and the overall production of farm products increased 38 percent above 1939. That is the only way to produce more food.

Canada, in five years of war, has stepped up her productive capacity to an extent that would have required 50 years under normal Price System operation. Shipshaw alone, in five weeks of full-load operation, can produce all the aluminum Canada consumed in an entire year prior to 1939.

More tools have been built in these years of war, 1941 through 1944, than were built in the preceding 40 years. It has been stated by business economists that by 1946 only 83 people will be required to turn out as much as 100 persons did in 1940. In other words, 17 out of every 100 people are permanently displaced, due to technology introduced since 1940 alone. You figure it out. Our total labor force now is approximately 58,000,000. Seventeen out of every 100 now employed will never again be needed in the production of goods now being made.

Isn't this what we have striven for all along, this reduction in human toil? Is this bad? From the purely physical point of view of the health of the human components involved, reducing human toil is wonderful. It is also tragic for them under the operations of a Price System of trade and commerce. For, in such a system,

you and I must be able to exchange our man-hours of labor for purchasing power.

World War I on the European Continent ended for those Americans engaged in it there; but ever since the end of that war, Americans on this Continent have been engaged in a continual battle against abundance, in a continuous war to maintain a Price System, in a continuous struggle *not* to achieve America's destiny, which destiny is to be achieved only in obedience to the technological trends on this Continent. We have been battling for the life of the Price System ever since 1919 and have constantly had to administer more blood transfusions, such as installment buying, foreign loans and pump priming.

Brother, Can You Spare a Token?

We would like to illustrate to the great majority dependent upon selling our man-hours of labor in exchange for purchasing power under the Price System how very little that system has offered us of America's great productive capacity in the recent past. Also, how little most of us get even in the wartime 'boom' and how utterly hopeless it will be for the Price System to solve America's social problems and still remain a Price System.

The Price System has been able to provide but a mere pittance of purchasing power to most of us. In 1936, 33 $\frac{1}{3}$ percent of all American families earned less than \$780 per year; 50 percent got less than \$1,070

per year; 66 $\frac{2}{3}$ percent less than \$1,450 per year; and 89 percent less than \$2,500. Only one percent of all American families managed to earn anything above \$10,000 per year. Eight million families in 1936 continually faced starvation; eleven million continually fought poverty.

We're very sure that now while there's a war on conditions are better for most of us. Are they? The Bureau of Labor Statistics maintains that an income of \$1,740 per year is the minimum subsistence budget for a family of four; but 18 million families in 1943 lived on less than that. The University of California disagrees with that minimum subsistence and insists that four people need \$2,645 per year; but there were 25 million families who earned less than that in 1943.

Manpower, like other commodities, has not been one of scarcity on this Continent, but of abundance. As late as January 8, 1945, Secretary of Labor Frances Perkins stated that the labor supply was ample; the only problem being how to get workers where they are needed. For 26 years the problem of labor has been WHAT to do with it; how to employ it in private enterprise, and how in heaven's name to pay it enough to buy back the products of modern technology.

The Late Unpleasantness

We saw what happened to purchasing power in the 'late' depression, but do we remember? Only twelve years ago, 20,000,000 Americans were

unemployed. Only a little over four years ago, 1940, 8,500,000 were still unemployed. In 1933 goods, produced by technological methods, were piled high on the shelves of business warehouses, but two-thirds of all Americans, at that time, were ill-housed, ill-clothed and ill-fed.

While approximately 600,000 farm families were on relief as late as 1936 and only one child in six examined in Chicago was in robust health, we destroyed pigs so that the selling price on pigs could be maintained. While one child in 12 suffered from malnutrition in the depression years, we destroyed oranges, full of Vitamin C, so that the price on oranges could be kept at a profitable level. Might we point it out as probable that the recent rejection of 4,500,000 young men as unfit for the Armed Forces, could be traced to this prolonged period of malnutrition in their early childhood.

When only four in 100 farm families in the depression years were in good physical condition, and while 250,000 babies were born annually in United States without benefit of a doctor or even a nurse present, 6,000 doctors were on relief in New York State.

During the depression and during this war, three out of ten houses have been below a decent standard of livability, and 8,000,000 families occupying them existed with the barest of necessities. It took Marshall Field, the philanthropist, to point out that low-cost housing units were not profitable for private enterprise and that

it was the function of Government to provide such units.

As late as March 1941, approximately 10 percent of our population were receiving poor relief, and 60 percent of all persons over 65 years of age were on charity or relief.

Our productive capacity, using technological methods, has gone up by leaps and bounds, but our income has remained practically stationary or gone down and in many cases out altogether. Free Enterprise during those depression years, when there was absolutely no government 'interference' did not furnish jobs nor purchasing power. Government and Government alone, with WPA and various Federal works projects or by direct relief, DID furnish many millions of Americans with some purchasing power.

War is Good Business

War, and war alone, has temporarily solved the unemployment problem. War also solved another important problem temporarily, the problem of business. It furnished business with a topnotch customer, Uncle Sam. In his Message on the State of the Union on January 6, 1945, the President of the United States declared:

We have had full employment during the war. We have had it because the Government has been ready to buy all the materials of war which the country could produce — and this has amounted to approximately half our present productive capacity.

Do you doubt that war is good business? Let the facts speak for themselves. War profits for such companies as Bethlehem Steel, International Harvester, Allied Chemical & Dye Company, Standard Oil of Indiana, Consolidated Vultee Aircraft, Goodyear Tire & Rubber, Union Pacific, and many others, in the year 1942 were twice as much **AFTER TAXES** as in 1939.

The Nazi Government obtained \$25,000,000 to \$35,000,000 of American money between the years 1936 and 1941, for use in Germany's expanding war economy.

Prior to the war, American business supplied the tools of war to our enemies; notably 22,734,000 barrels of petroleum to Japan in 1940, together with thousands of tons of scrap iron. Who protested these shipments? *Technocracy* did. Did any other organization? Very few. And why not? Simply because the Price System works that way. A customer is a customer even if that customer happens to be arming against us.

So far we citizens on the home front have been fighting for business also; we have been fighting to maintain the status quo. Let us not be too complacent about our contribution to the war effort. If we had installed Total Conscription when it first became necessary in 1940, Lt. Col. W. E. Dyess, reporting on the Bataan March of Death, could not have described it thus:

On that march, through the swirling dust we could see a long line of trucks, standing bumper

to bumper. There were hundreds of them. And every last one of them was an American make. I saw Fords, which predominated, Chevrolets, General Motors and others. These were not captured trucks. They bore Jap army insignia and had been landed from ships of the invasion fleet. It is hard to describe what we felt at seeing these familiar American machines filled with jeering, snarling Japs. It was a sort of super-sinking feeling. We had become accustomed to having American iron thrown at us by the Japs, but this was a little too much.

War, that last shot in the arm of the dying Price System, is losing its effect. Why? Because of the increased use of technology speeded up by the very demands of that war itself.

He Who Calls the Dance—

The unemployment problem will soon be back once more to plague us; only this time it will be much bigger. This time we can't supply another shot in the arm; there isn't any serum left. We cannot operate an economy of abundance with the tools of scarcity. There is no solution to disemployment under the Price System; it is a natural part of that system. Any system using money as a medium of exchange has always operated for the benefit of the few at the top at the expense of the many at the bottom.

Under a Price System, we do not **DISTRIBUTE** anything. Such a sys-

tem is organized to buy and sell at a profitable price. We are so conditioned in business psychology that all of our plans revolve around money; not one of them revolves around DISTRIBUTION of America's abundance. We can visualize nothing but more of the same. How can conditions in the postwar under the Price System be anything but WORSE than they were before the war, when technology has been so stepped up that less man-hours are needed now than prior to the war? We have not solved a single one of our problems; we have simply put off the day of reckoning. When this war is over, that day of reckoning will come, perhaps before, and we must at long last face and solve those problems which have been with us for 26 years, or go down to defeat and chaos.

Business Means Business First

One political candidate before the last election toured the country promising employment because of the great demand on business to produce automobiles, vacuum cleaners, refrigerators, irons, washing machines and other necessities people need. We NEEDED all these things in 1938; but in 1938 there were 24,000,000 homes with no refrigerators, 20,000,000 with no washing machines. We NEEDED those things in 1938, but despite our great need business did not produce them, for the simple reason that business couldn't get its price for them.

We did not have purchasing power

because those goods then, as now, were produced by technology rather than man-hours of labor. The only way we could buy those articles in 1938, and the only way we can buy those articles in the coming postwar period under the Price System is by selling our man-hours of labor. Does the step-up in the use of technology during these war years augur well for the exchange of our man-hours of labor in the postwar period?

Most of us have a very erroneous conception about business; we actually are naive enough to assume that business is concerned with whether or not we are employed. No assumption could be less correct. If that were so, why could not business solve the unemployment problem in ten years of depression? There was no government 'interference' then but much government assistance to business in the form of pump priming. Nothing interfered except the lack of paying customers, customers that could buy back the goods produced.

The Price System is not now, has not been in the past, and will not in the future be operated for the general welfare. Its sole function is to keep business going, and business' sole purpose is to make money. When any particular business, large or small, ceases making money, it ceases to be a business. It matters not in the least how many people are employed in that particular business, they are automatically thrown out of work. Remember THAT when you read the glowing promises made by General Motors Corporation, or Ford, or International Harvester, or the

railroads, or the political parties about 60,000,000 postwar jobs!

If business pretends to guarantee you full employment in the postwar transition period, under a Price System, it is so much dust in your eyes. But let Alfred P. Sloan, Jr., Chairman of General Motors Corporation, and a champion of 'free enterprise,' state the case for jobs under a Price System, as he did at the annual dinner meeting of the Academy of Political Sciences in New York City on November 15, 1944:

. . . JOBS are an end result. They are not means to an end. They do not just HAPPEN. They do not result from wishful thinking. There are no rabbits in this particular hat. Political promises do not create jobs. And never will. Jobs flow from a combination of capital, management and opportunity. And from nothing else! The catalyst is a prospective profit. Without this ingredient there can be NO jobs in a free economy.

The fear that there will not be jobs for all is the great fear now besetting and afflicting American life. There is much socially useful work to be done in America, but none of it will ever be done under the Price System because it will not be profitable for 'free enterprise.' We've needed to rebuild America for a long time and to liberate its people from want in the midst of abundance. We need houses, roads, recreation centers, parks, schools, hospitals, a continental hydrology system, more power

plants, a continental highway system. None of this socially useful work, which would keep us all employed for 20 years or more, will be done by 'free enterprise' because it would not be profitable, regardless of the general welfare.

After The Ball Is Over

If we insist upon operating under the tyranny of a Price System in the postwar period, the competition for jobs will be terrific. There will be many less jobs than before the war, due to the introduction of new technology since 1939, when we had 11 million unemployed. Let us get that point straight. Purchasing power is absolutely essential under a Price System, and total purchasing power depends upon total man-hours of labor. On the acceptance of that knowledge hinges the decision we must make soon, and very soon indeed.

A simple thing like a shift from a 48-hour week to a 40-hour week will mean a cut in take-home wages of 20 percent. An estimated 40 percent slash in war production at the end of the European war will throw at least 10 millions out of jobs. One-half of the population will have to make shifts in the labor market, as well as geographic shifts, according to the American Federation of Labor. When government spending for war drops, purchasing power for many Americans will completely disappear. And there are 13,000,000 American families who do not own a single war bond to tide them over.

By 1946 the Department of Com-

merce predicts 19,000,000 unemployed due to war-developed technology, if the war is over by then. By 1950 the business journals predict a complete crash. And there these two exponents of 'free private enterprise' depart and leave you in 1950, in a complete collapse, with no solution to that debacle.

For these three years of war more human beings have been needed to tend the machines producing the goods of war. For a short three years some of us have been 'in the money' so to speak and many of us may think that it is going on forever. Our awakening will be quick, rude and drastic.

On September 16, 1944, *Business Week* reported on the first survey of its kind ever made; a survey by the Bureau of Labor Statistics for the War Production Board, at Buffalo, New York. Buffalo has some 40 war plants, which employ about one-half of the total factory employment there. Peacetime needs of these 40 plants were 37,000 persons; wartime peak was 109,000; and the predicted possible need in the postwar is for 54,000 persons. These are the first official figures revealed by private enterprise to a government bureau. *Business Week's* editors admit that the postwar estimates are 'optimistic' to say the least. This survey is indicative of what is to come when war production ends. It is the fear of this cut from wartime peak employment to much lower postwar employment which caused the CIO Steel Workers to demand a guaranteed minimum

weekly wage for fifty weeks in every year.

How can a weekly wage, or any wage for that matter, be guaranteed when man-hours of labor are constantly being permanently displaced by technology?

In 1940, it took 440 men one year to build a B-24; in 1943 only 17 men were needed. For every 100 hours in 1940 to build an A-20, only five were needed in 1944. International Harvester Company has a machine which will pick 1,000 pounds of cotton per hour; two men only are needed to operate the machine. It takes one worker one day to pick 125 to 150 pounds of cotton by hand. Eight million persons in the South are dependent upon cotton for a living. Add two and two and you don't get nine.

The hope for new industries to take up the slack is quickly dispelled by a glance at just a few. Synthetic rubber, surely that will require workers? Only 18,000 persons, employed in 46 synthetic rubber plants, are needed to produce the requirements of the United States and Canada combined; and one plant at Institute, W. Va., can produce one-seventh of all United States needs, with only 1,250 persons employed.

The Defense Plant Corporation in October 1944 was scheduled to open a new plant to produce rayon tire cord. Only 300 people will be needed to operate this plant with the capacity of producing 12 million pounds of rayon cord per year by technological methods.

Reconvert to What, Scarcity?

No political party, no politician, no business and no business man seems to understand the role of technology. Therefore, we can have nothing but confusion in our attempts to solve our postwar problems by Price System methods. As an aid to employment, the Senate Committee on Reconversion in October 1944 proposed a ban on the reconversion of all Government-owned plants in eleven midwestern States which during peacetime produced 65 percent of national manufactures.

The best which Congress has offered to date, based on purchasing power and money, was a return to a 40-hour week (with a consequent drop in pay), unemployment compensation, some retraining and re-employment aids, a broad program of public works to relieve unemployment, and the placement of cutbacks with an eye to maintain employment.

How weak and inadequate these plans are! What else can we expect within the framework of the Price System? America's destiny can never be realized with political palliatives or picayunish attempts to furnish us with a measly portion of purchasing power.

Tragic as the war has been, it has brought some very fundamental changes to the United States. Whether we wish it or not, we have a bigger stake in America than when the war began. With our bonds and taxes, we have become the owners of tremendous physical goods and services. We

own practically all of the synthetic rubber plants; nearly all aircraft factory capacity; one-half of the machine tool capacity; one-tenth of steel production; 20 of the 50 high octane aviation gasoline plants; permanent and temporary housing units; food galore, trucks, cars, tractors, unissued government clothing, medical and dental supplies, numerous other articles. An attempt will be made to sell this to 'free enterprise' without upsetting the business applecart. During the war we invested \$25,000,000,000 in plants; Free Enterprise invested only 2½ percent of the total.

To Whom Do The New Plants Belong?

We can never go back to 1939; not unless we first destroy this equipment; just as the soldier can never go back to jobs which are not there, buildings torn down, and women in the jobs anyway.

Shall we permit this which we own to be sold to private enterprise, or shall we, as Mayor LaGuardia has proposed, destroy all surplus goods which might cause unemployment?

The dictator Technology, that swiftly moving finger of our power age, writes, and having writ, removes not a single kilowatt of it. Technology is demanding that we discard the rules of the game of the Price System, that game of enforcing scarcity and ignoring abundance. Technology will have its way, for upon it is our way of life dependent. *It is the American Way of Life.*

Technocracy Has The Answer

Technocracy foresaw the need for an overall design of operating, both in war and in the transition period, and presented the first half of its program of Total Conscription as early as July 1940. In November 1940 the second half of that design was presented. Total Conscription is not the social program of Technocracy; it is an emergency program; designed to win the war in the shortest possible time; with the least loss in lives and natural resources. It will be much more necessary in the transition period to prevent chaos. It is the natural outgrowth of the scientific analysis made for 26 years by this organization. Total Conscription can be installed by constitutional methods only. Events have already made this design necessary; and an informed public will demand and achieve its adoption.

Essentially Total Conscription calls for the Total Mobilization of all of our resources, men, machines, materiel and money, with National Service from all and Profits to none. It is a method of operating along scientific, technological lines, which will insure that no American need suffer from lack of food, clothing, housing, medical and dental care or education for his children during the transition period, when income may be greatly curtailed. It insures that we need not duplicate the conditions prevalent in the depression years, in the coming transition from war to peace. It furnishes a yardstick for measuring the physical operating characteristics of

America, the physical resources, and then a decision as to which direction we want to go in the future.

On the basis of the Energy Survey of North America, a physical survey of our resources and technology, it was possible in 1921 for the Technical Alliance of North America to state that a major economic crisis was due to occur in America by April 1930. Not enough Americans took heed nor listened. Between 1921 and 1929—weren't we the most prosperous nation on earth? What did we have to worry about? Nevertheless, 6 months BEFORE the time mentioned by Technocracy, the crash occurred; and we have never recovered from the effects of that crash. Technocracy has a dozen other major correct social predictions to its credit.

Today, TECHNOCRACY is unequivocally stating that ANY tomorrow on this Continent must be based solely on the greater use of technology; not lesser. In order to prevent chaos, we must organize to distribute abundance. In order to survive as a nation, we must discard our old outworn political and financial methods designed for the era in which natural scarcity prevailed. We must liquidate our pro-fascists at home wherever they may be found, by installing the only design capable of doing these things. The trend of events in North America demands Total Mobilization of all machines, materiel and money, as well as men and women, in the first social mass movement in all history.

How many of us will listen and heed?

It's Not the Heat, It's the Price System

EFFICIENCY ENGINEER VS. DESIGN ENGINEER

(Two Articles on the Same Subject)

Keeping Your Hat in the Ring

by Dr. E. A. Irvin

Reprinted by Permission from G. M. Folks, August, 1944

The following article on 'Hot Weather and Salt Tablets Prevention of Heat Exhaustion' is the seventh of a series written by Dr. E. A. Irvin, medical director of the Cadillac Motor Car Division, Detroit, in the interest of health and safety.

A very common type of illness, which is associated with hot weather, is 'heat exhaustion.' This condition may vary from extremely mild cases to severe attacks causing complete collapse. This condition is most prevalent among workers engaged in hot, heavy work; however, it does occur in mild forms in various lighter types of work during hot, humid weather. In its milder forms 'heat sickness' is very often not recognized as such, showing up as a loss of energy, increased fatigue or a letdown, a situation exceedingly undesirable in war times. Medical research has shown that loss of salt from the body through excessive sweating is at the bottom of the trouble. There is a simple explanation for this fact. Every body cell, the blood stream, spinal cord, the brain, etc., must contain a certain amount of water if the proper chemical balance necessary for nor-

mal body functions is to be maintained. Unless salt is present in the proper quantities, the various parts of the body cannot hold the necessary amount of water. When body salt is lost through excessive sweating and not replaced promptly, cells and other parts of the body lose water, upsetting the delicate chemical balance of tissue and body fluid. If the salt loss is slight, the physical reaction will be a tired, uncomfortable, letdown feeling. The mild case is the type that may cause trouble because it will go unnoticed.

Workers Who Sweat Need Salt

Even a slight salt loss saps energy and slows up muscular coordination and reactions. When this happens men feel tired and uncomfortable, mistakes increase, individual producing capacity goes down and as strength and efficiency are undermined men become careless and serious accidents can easily occur.

To prevent these unnoticed but highly dangerous cases salt lost through sweating or other bodily functions should be replaced at the same time and in the same ratio as the loss. It is generally agreed that the average worker needs during the day one level teaspoon of salt for

every gallon of water he drinks. A part of the salt requirement can be fulfilled by adding additional salt to our food in the form of seasoning; however, this is rarely adequate for the individual who perspires moderately. The additional salt requirement may be fulfilled by taking salt tablets. The tablets contain regular table salt and should be swallowed whole with a drink of water. A few individuals develop a mild type of indigestion when salt is taken in large quantities. It is advisable for these individuals to break a tablet in half and take only one-half tablet at one time. One of the most frequent causes

of indigestion associated with the taking of salt tablets is due to individuals taking the salt on an empty stomach. It is extremely important that all individuals eat some type of breakfast before reporting to work because 'heat sickness' is much more common among those who fail to eat before reporting to work. Workers engaged in light to medium work will require from four to six tablets daily; workers engaged in heavy work from eight to ten tablets and workers in extra heavy and hot work from twelve to fifteen tablets during an eight-hour day. Take salt, avoid that let-down!

Heat Sickness, a Medical or Engineering Problem?

by Elvin Nelson 8741-1

The following article on Heat Sickness is by a factory worker who is a Technocrat. He approaches the subject from a different angle than the Doctor does. As we see, the question becomes larger than a simple prescription of taking salt tablets. In fact, the entire Price System becomes involved. Its interference role is clearly illustrated. This is a good example of the difference between the approach of the efficiency engineer and the designing engineer. When factory buildings are designed scientifically, there will be no need to take salt tablets

at work. In the meantime, we'll have to string along with the doctors; they're doing the best that the Price System will permit.

'In The Sweat Of Thy Brow'

Doctors have found out that loss of salt from the body through excessive sweating causes heat sickness. To relieve the condition, they advise us to take salt tablets to relieve the salt deficiency. But, in so doing we may get indigestion, they admit. At any rate, nothing has been done to relieve the uncomfortable feeling of sweating in itself, so the problem appears

to be very unsatisfactorily disposed of.

Why do we have the doctors trying to solve a problem which belongs to the engineers?

What has an engineer to do with sick people, you may ask?

An engineer will install air-conditioning and that will not only solve the problem but will remove it completely. Air-conditioning will also help in removing the causes of common colds which the doctors believe come in considerable degree from failure to properly humidify the air within heated buildings.

Complete air-conditioning will involve the following equipment: A ventilating system, heating and cooling systems, humidifier and dehumidifier, and a filter.

A Thermodynamic heating system would be the most desirable where an air-conditioning system is to be installed, for the reason that the same equipment can be used for heating in winter and cooling in summer. A Thermodynamic heating system is the same as a refrigeration system, designed so that the refrigeration cycle can be reversed. That is, in addition to taking heat out of a building, the heat can be put into the building, or home, whichever it may be.

Oceans of Heat and Coolness

In applying a Thermodynamic heating system to a factory building, one bank of coils should be in connection with the ventilation system, the other bank of coils in the ground below the frost line. For cleaning the air, type E electromatic filter would

be a desirable filter because it is a self-cleaning electric precipitator for removing dust and smoke and cutting oil mist and welding fumes from the air.

Some people express the opinion that air-conditioning is not practical because of insufficient insulation, too many windows, etc. If insulation is good enough for heating in winter time, it will be good enough for cooling in summer time also. And as far as windows are concerned, why do we have windows in a modern plant? If the light has to be on at night as well as day, then why have windows at all? You don't get any light from the windows at night and not enough in the daytime.

The cost of air-conditioning is not prohibitive, as some people may think. If a Thermodynamic heating system is used, the cost of heating will be less than half that of direct heating.

In *Technocracy Magazine*, A-5, December, 1935, is a description of Thermodynamic heating and a chart showing the efficiency in comparison with direct heat and also how it can be used in homes. The following quotation is from that source:

Enter The Price System

It is a safe estimate that by universal use of heating by this method the fuel required would be reduced at least 50 percent. If that is the case, why is it not introduced?

There are several reasons. One is just the ordinary inertia that has to be overcome before any-

thing new is attempted. The greater part of this is due to Price System interference control, because what is technically feasible and what financially-minded business men can be induced to do are rarely synonymous. Much opposition could be expected from the gas, electric, coal, and oil companies whose business would be curtailed.

A graver reason is that such a system requires low temperature radiators which would have to be almost as extensive as the walls and would, accordingly, probably have to be built as an integral part of the walls themselves. That, of course, requires that the heating system be incorporated into the design of the house as an integral part, which is remote from present day practice in architecture, except in cases where fabricated houses are being considered.

The saving of non-replaceable fuel that would be effected by such a system is enormous, and is from every social point of view highly desirable; but for some time yet thermodynamic

heating is likely to remain on that extensive list of socially needed and technologically feasible developments whose realization is rendered remote under the interference control of the Price System.

There you have it. A doctor spends ten years studying how to treat human ailments. In medical school they teach him the physiology and pathology of the body. One primary fact is, however, carefully excluded from the curriculum. That is that the Price System is conceived in waste and dedicated to scarcity. If either waste or scarcity were abolished, the Price System would collapse overnight.

Doctors of all schools compete for the business of the sick. The more sick there are, the greater doctors prosper. It is an ugly thought, but it's a fact. It is not in the economic interests of doctors to abolish sickness. As a group they do the best they can, but that best dare not be too good, else they lose a livelihood.

The problem of heat sickness is a minor one. It can be quickly abolished by the design engineer. But the Price System we still have with us, Cushlamachree!

THEY CAN'T DO THAT

'Calculating machine, developed at Chrysler. It estimates automatically barometric pressure and air pressure, translates engine r.p.m. and brake load into horsepower together with fuel consumption. Skilled manpower not needed on dynamometer operations. Youths with only grade school math can operate it. It's faster and more proof against error than the human being

could be.' From *Detroit News*, Dec. 19, 1944.

'Progressive Rocker Arm Welder for aluminum is on the market. Eliminates tens of thousands of punching, drilling, reaming and riveting operations—plus the rivets themselves—each machine will save 15,000 to 30,000 rivets every day!' From *Adv. in Detroit News*, Oct. 17, 1943.

The First American Papermakers

Victor Wolfgang von Hagen

Author of 'The Aztec and Maya Papermakers'

Reprinted by Permission of The Paper Industry and Paper World, December, 1944

That eminent authority on old papermaking, Dard Hunter, has told us in many of his publications that *paper was a Chinese invention*. 'The Chinese eunuch Ts'ai Lun, in the year A. D. 105, proclaimed his marvelous invention of true paper—a thin felted material formed upon flat porous moulds from macerated vegetable fibre.' And, step by step, this *True Paper* penetrated both ends of the Taklamakan desert until, by the Fifth Century, *true paper* was in general use throughout all Central Asia. From thence it spread to Europe, to England, and centuries later, to America.

Paper, it is generally accepted, was only first manufactured in America in 1690 (one of the last civilized places on the earth's surface to establish paper mills), but what of the Aztecs and the Mayas? They were making, and they were using paper long before the Chinese are recorded to have done so. So who was using 'what' and 'where' depends on a point of view. Paper may have two definitions, the cultural and the technical, for paper cannot be defined wholly by the process of its manufacture. The Aztecs and the Mayas were not the originators of true paper, but they were very, very close to it. Paper was in general use by the Mayan civilization in Southern Mex-

ico as early as the Second Century B.C. They were 'the first American papermakers.'

Let us glance quickly at the Mayas. They were typical American Indians, agriculturists mostly, huntsmen at intervals. Having learned to 'domesticate' such products as corn, potatoes, squash, and beans, they then provided themselves with leisure. They lived in a land where soft limestone lay exposed below the verdure of the jungle. The leisure that a beneficent agricultural system gave them was used in carving that limestone. Out of it they fashioned such beautiful cities as Copan, Palenque, and Quirigua. Upon these cities they lavished designs that, even today, excite the artist. Without knowledge of metal, without beasts of burden, the Mayas built their civilization. Theirs was a true neolithic world, a virtual stone age. Yet they did more than this. They were traders and merchantmen, too. Paths were cut through the green mansions of tropical Middle America; trade and commerce were far-flung, even beyond the limits of their realm. Ideas in art, religion, and government were spread broadcast, and these served to quicken other tribes of other speech and lesser culture. Astronomy became highly developed and gave birth to a calendar. The Mayas even discovered the

concept of zero. And so out of all this maze of abstract mental activity there arose a system of ideographic-painting which eventuated into hieroglyphics and further evolved into a form of writing. This became literature. As a corollary to writing, a smooth writing surface had to be invented. Thus, in some remote epoch, a paper superior in texture and durability to Egyptian papyrus was perfected by the Mayas. This bark-fiber paper they called *huun*.

Paper gave permanent content to the Mayan civilization. The invention of writing, and of paper on which to record it, gave expression and durability to its ideas. Paper, in the role of a sketch pad, played its part in the erection of the gigantic architectural monuments. Paper became the transmissional agent of Mayan civilization from one epoch to another, and gave substance to its oral traditions. As man had done elsewhere—in China, in Egypt, in Rome, in Greece—so did the Mayas accumulate books (and they were actually books). These they housed and protected through the centuries. And when the Mayan peoples went into eclipse in the year 600-9 A.D., the Aztecs in Central Mexico took over. The Aztecs entered the lake regions of the valley of Mexico, gradually absorbed the commanding island and called it Tenochtitlan (from their own tribal derivation, Tenochas). With a judicious use of rapine, bribery and statecraft, they enlarged this realm. As the Romans took over Greek culture, so did the Aztecs take over the Toltec.

Under the Aztecs much of Middle America became systematized. Trade was extended; so were the levies of tribute. In no civilization that had heretofore appeared in the Americas was there so insistent a demand for paper.

Paper was needed to record tributes, to mark the villages and cities tributary to Mexico. Paper was needed for legal documents. Paper, made into rolls thirty feet in length, was used as by the scribes of ancient Toth to record methodically the accretions of their conquests. Paper took on, as it did with the Chinese, a religious and ceremonial character. Paper, folded like a railroad timetable was used for preparing the books, forming the libraries which were housed at *Taxcoco*. And, finally, paper was itself a tribute. Entered in one of the most famous Mexican codices, the *Libro de los Tributos*, there is this highly significant item: 'Twenty-four thousand reams of paper are to be brought yearly to the storehouses of the ruler of Tenochtitlan.'

'Twenty-four thousand reams of paper . . .' Judged by any standard, this is an enormous amount of primitive paper, even when the Spanish word *resmas** is nothing else than an expression which fortuitously coincided with the Aztec numeral *pilli*, or twenty. 'Twenty-four thousand reams'—480,000 sheets of paper, in sum, was then to be paid annually in tribute. This enormous consump-

*Ream is adopted from the Spanish *resmas*, which in turn owes its terminological derivation to the Arabic *rismah*, a bundle, especially a bundle of paper.

tion would seem to suggest that paper-making had left the craft stage and had entered that of industry.

Neither the papyrus of the Egyptians nor the *amatl-paper* of the Aztecs was actually "paper" as we now understand it. True paper reduced to an encyclopedic definition, is a more or less thin tissue, composed of any fibrous material, the individual fibers of which are first separated by mechanical action (beating, pounding, etc.) and are then deposited (actually felted) on a mould while suspended in water. This is 'true paper' and the Chinese were the inventors of it. It was the Chinese who devised the implement—the papermaking mould which was capable of picking up the masticated fibers, so constructed as to allow the water to escape, leaving the interwoven fibers in an even, homogeneous mass. This, as every paper-maker knows, is paper.

Throughout the centuries, this has remained the principal technique of papermaking, and upon this principle the modern paper machines were founded. Not only did the Chinese invent and perfect true paper, but from the heart of China paper began its westward march.

Yet, other civilizations reached great cultural heights without the knowledge of 'true paper.' The Egyptians and Syrians manufactured papyrus, the Mayas, *huun-paper* and the Aztecs perfected *amatl-paper*. In default of the technics of 'true paper,' they still perfected a writing surface of considerable utility. This invention affected civilization materially. While it is not necessarily

true that the quantity of paper consumed stands in direct relation to the intellectual development of a nation (for the Inca civilization in South America had neither paper nor writing), it is nonetheless true that man's intellectual rise has been astride the fibrous material called paper—no matter what its mode of manufacture. Whether it was couched in a mould as was the Chinese paper, or pressed into a laminated substance as was papyrus, or beaten from the inner-bark of the wild fig tree, as was the *amatl-paper* of the Aztecs, it served for writing—and writing, once perfected, freed communication from the limitation of time-space factors.

How was this primitive American paper made? Very simply. It was beaten from the bast-fibers of the *Ficus*, a tropical tree related to the mulberries. In essence and in the beginning, Mayan paper was fashioned much as tapa cloth (although Dard Hunter will not accept the term tapa cloth, since it is paper, not cloth). The soft inner bast fibers were pulled from the tree and made into a roll and submerged into a running stream to free it of its 'milky sap.' Then days later it was placed on a smooth surface and beaten with wooden beaters, grooved with horizontal ridges. The pounding intermeshed the delicate fibers until a smooth, soft, pliable and thin surface was created. Then with heated stone 'irons' it was burnished. Cut into strips, the artist-composer wrote and drew upon the strip; it was then folded screenwise into book form.

So far there is nothing unusual about the technique of the first American papermakers. The methods, the beaters, even the same species of plant are universally used everywhere by primitive people.

But here rises the exception. The American Indians were the only people using the tapa-like paper material who used it culturally, as paper. They began not only to draw upon it, but to write upon it. They developed a series of ideographs which, with illustrations, created literature. This was the first and only time that tapa paper became a truly cultural medium.

This development did not end with the Mayas. When their successors, the Aztecs, took over the ancient world of Mexico, they improved upon the technique of the Mayan papermakers. Not only was the tapa paper made into rolls and strips, but into paper sheets. Apparently, so much paper was used, the paper craftsmen found themselves running out of fibers, since when a tree was stripped of its entire outer bark, it died. Necessity being the mother of invention, everywhere it was suggested to the papermakers that they utilize the branches. Only from these they obtained smaller lengths of fibers. Laid edge to edge on a small board, these fibers were pounded gently so that the edges of the strips were meshed, felted, in a word, couched, to form a sheet of paper. This was the only advance open to tapa paper manufacture. The methods are so close to the paper that it is hard to know

where one begins and the other ends. By the introduction of this technique to papermaking, even greater quantities of paper could be manufactured. The Aztec rulers made it a point to levy tribute on these papermaking villages. The consumption of paper by the Aztec people was truly enormous.

It is not alone from the records they left us, nor from their monuments which still defy time, that these facts have been gathered. For ancient papermaking still continues in Mexico. In little villages in Pueblo and Vera Cruz, Indian women still make paper, as did their ancestors five hundred years ago. Neither the instruments nor the techniques have changed. Time has altered nothing. And when, in the course of preparing a book about these ancient papermakers, I discovered these people, they (with much urging, of course), prepared actual paper samples for the book, precisely as would their ancestors had they lived and had they not been snuffed out by the roaring thunder of the Ordnance of Hernan Cortes.

America need bow its head to no other culture. Whether it be Greek, or Egyptian, Chinese or Burmese, the patient American Indian craftsman, working on this green continent, discovered as early as any, the means of conveying his thoughts by putting them down on paper. They had no knowledge of it then, but these Mayas were the First American Papermakers.

'In Chicago one person out of nine is a Negro.'

Free Enterprise Forever!

THINK AMERICAN!

by The Peripatetic Technocrat

Sign in a Cleveland, Ohio, bus station: 'Americans make up less than 7% of the world's population. Yet we have 35% of the world's railroads; 45% of the world's radio sets; 70% of the world's automobiles. Our privately run business system works. Think American.'

This neat bit of propaganda reminds us of the spectator at a prize fight who rushed up to the winner after the fight and exclaimed: 'We licked him, didn't we?' Technology has built America's industrial civilization, not business. The function of business is to exploit the natural resources of this land and its people for all the profit the traffic can bear. The voice of Technology has been mute. The voice of the Price System is ever with us.

5,000,000 Consumers Can't Be Wrong

Anthracite Industries Incorporated has designed and built in their laboratory the first automatic home heating unit constructed for the sole use of hard coal. The burning unit itself is only 8 by 18 inches in size and weighs only 75 pounds. It is cylindrical in shape and consists of a special steel fire tube surrounded by a 2 inch jacket through which the hot water is circulated. A unit with a 4 inch fire tube puts out 50,000 B.T.U.'s per hour, enough for a 4 room house. A unit with a 6 inch fire tube will heat an 8 room house.

The outfit, complete, consists of a blower that sucks air through the fire tube and out the flue; a worm that feeds coal slowly into the fire tube at one end and pushes the ashes out the other end; a pump that forces water through the jacket and into the

radiators at a fast rate. Overall size is about three feet long by two feet square. An old style furnace weighs around 1,000 pounds and fills up half the average basement. Fuel efficiency in the old style furnace is about 60 percent. In the new midget furnace it is 84 percent. *This 24 percent increase in efficiency means a commensurate saving in coal.* The furnace is easy to start and reaches peak heat in 15 minutes.

About 5,000,000 hard coal stoves are in use for home heating in the U. S. This new heating unit employs a new principle in combustion. In the old style furnace, the fire bed is 24 to 30 inches wide. The temperature of the burning coal in such a unit hovers around 1,000° F. at the outer 3 inches of the fire, while in the center of the fire bed, it may rise to 3,000° F. At this higher temperature anthracite does not burn completely

to carbon dioxide but gives off much carbon monoxide. When carbon burns to carbon monoxide, only one-third of the total heat is released in the firebed and two-thirds is released in the blue flame above the firebed. This blue flame burns with additional air to form carbon dioxide. Most of this blue flame heat is lost up the flue.

Technology Is Ruthless

In the new unit no carbon monoxide is formed. Only 4 or 5 small lumps of coal are burning in the fire tube, at any one time. The temperature of the burning coal does not go above 1,200° F. Thus, complete and very efficient combustion is obtained. The three moving parts of the unit, consisting of pump, blower and worm, can all be run from one motor. The speed of operation of these three moving parts determines the B.T.U. output of the unit at any given time. Thermostatic control over the motor determines the rate of burning so the furnace can be cut down so as to provide only sufficient heat for hot water or stepped up to cope with zero weather.

No chimney is required for the unit because of the forced draft of exhaust air and gas. A four inch vent leading directly to the outside is sufficient. Because of the forced water circulation there is no dependency on gravity flow (hot water or air rising). Thus the unit can be installed in any part of the house. When installed in horizontal position, the entire operation is automatic. In the tiny firebed inside the cylindrical tube, the

coal burns five times as fast as in the big old style furnace. Despite this rate of burning, it saves over 25 percent in fuel because the coal burns completely. No clinkers are formed because the heat is carried away so quickly and because the coal burns at a temperature below the point at which clinkers can form.

The Anthracite Industries Incorporated reasons that the new unit will make a place for itself because of its small size, its low raw material cost of manufacture, its simplicity of design, its light weight, and its ease of installation and operation. The automatic controls are the most costly part of the unit. The manufacturers of automatic stokers for old style furnaces are thus faced with the advancing march of technology. The law of the Price System jungle speaks only one language. 'Eat or be eaten.'

Another County Heard From

The Bituminous Coal Institute and 27 stove manufacturers, working together, have brought out what is characterized as 'the first revolutionary development in the heating stove in 200 years.' It is now undergoing trials in 20 homes, selected from among the 17,500,000 in the United States still using heating stoves. The soft coal stove which the Bituminous Institute is advancing is two feet square by three feet high. It comes in snappy, cabinet styles. Capacity of the stove is 100 pounds of coal, and it requires reloading only every 50 to 60 hours, depending on the weather. It will burn the cheapest

grades of coal so efficiently that *an overall saving of one-third in total amount consumed results.*

A \$60.00 unit is guaranteed to heat a 5 room house adequately. Although a stovepipe is used in conjunction with this soft coal stove, there is no smoke or gas released. The unit eats up its own smoke and gas through employment of three new factors in the design: plenty of air in the right place at the right time; an integrally designed series of high temperature refractory flues; a prescribed route of travel for the gases. A kitchen range based on the same general design will also be released. Neither one is automatic, but refuelling is cut to the irreducible minimum.

March Of The New Dimes

In 1934 an impoverished inventor demonstrated a small gasoline burning automobile heater to a group of Stewart-Warner officials. It worked. By 1941 there were a million South Wind heaters installed in passenger cars. Now, this gasoline burning heater is seeing service in military planes, motor torpedo boats, hospital tents and in many other uses with the Armed Forces all over the world. The heater is *small, lightweight and safe*. One type puts out 100,000 B.T.U.'s per hour and is used in cold weather to warm plane engines.

Redesigned to use natural gas or fuel oil, there are two possible models of this type of heater for home use. Neither type requires a chimney,

small vents through the wall being sufficient. The first model is a midget 8 inches in diameter by 9 inches long. One would be installed in each room in a house. They are completely automatic, with fan and blower. Each one would be connected to a central fuel tank. This arrangement gives separate control over the temperature in each room.

A larger model puts out 200,000 B.T.U.'s per hour. This is adequate for a 10 room house in a cold climate. This model is the size of an office waste basket, 10 inches by 15 inches, and weighs only 21 pounds. It is hermetically sealed and completely automatic, using an electric blower and an accelerating flow arrangement for the control of output.

Fall In Step, Or Else

On the face of it, this story is only a recitation of advancements in the technology of home heating, and a tribute to the skill of American engineers. It is all that, but it is much more besides. The three examples cited illustrate the trends of events as a whole in America. They illustrate how business is driven in its effort to avert the impact of technology upon its structure. They show clearly how business is forced to employ ever more and more technology in order to maintain its preferential position against competition. They show, also, how each time business is driven to adopt newer methods, it uses only as much as it is forced to use.

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Neither the Bituminous Institute,

the Anthracite Industries, nor the oil and gas interests are one bit concerned about conserving America's nonreplaceable natural resources. If they were, they would dust off the contents of the pigeon holes in their research files and go all out for thermodynamic heating. See A-5 *Technocracy Magazine*. Here is a really scientific method for not only heating homes in Winter but cooling them in Summer. Thermodynamic heating would cut fuel consumption 50 percent. But, perhaps it's one of those important projects which are too big for the picayunish methods of the Price System, such as, for instance: A Continental Hydrology System; a Continental Power Transmission System; a Continental Highway System; a Continental Inland Waterways System; a Continental Housing System; a Continental Public Health System; a Continental Fleet of Flying Wings, etc., etc., etc.

The microscopic, nose length type of planning indulged in by 'free enterprise' (when it is driven to any planning at all) is well illustrated in the philosophy of Eric Johnston, president of the Chamber of Commerce of the U.S., recorded elsewhere in this issue. This is to the effect that the answer to the postwar problem of business is 'the production of new kinds of things.'

Is You Is, Or Is You Ain't My Baby?

That's it! New kinds of things, new artificial needs. Keep the squirrels racing along the neverending, never stopping platform. Keep them

busy fussing with gadgets. Keep them broke buying parts. Keep them wrought up about phony issues. Keep them emotionalized over all the secondary, tertiary and piddling problems of the day. This diverts attention from the major issue. Carry on an endless campaign of discussion. Bury them up in a sea of semantic hogwash. Turn on the radio dramas full blast. Open wide the portals of the moronic movies. Pretty soon we'll have television. Boy, Oh Boy! 'New Kinds of Things' that's the answer.

Yes, indeed! Mr. Johnston has struck the keynote of business and given us the measure of its social vision. Now, let the orchestra loose full blast with a cacophonous niagara of postwar drivel. Away with all dissenters. We'll have no talk about fundamentals. We'll suffer no ideas about how to organize America's Great Technology along scientific lines. We are not interested in distribution.

Did some one say something about the General Welfare? Oh, Yeah! 'That's in the Constitution, ain't it?' O.K. we'll get around to that later. Right now we're busy with postwar planning. What's that you said? The war isn't over yet? We know, but we can't lose, can we? Didn't we win last time? Or did we? Shades of the Fourteen Points and the League of Nations. Away with yon ghost! 'There ain't no such animal.' The Price System can't collapse. It never happened before, did it?

Aren't we busy as all get-out designing 'new kinds of things' for 'His

Majesty, the American Citizen'? Yes, sir, don't talk to us about fundamentals. It won't do any good to yap about satisfying the age-old needs of mankind for the age-old things they never had enough of before, such as abundance, distribution, security, leisure, equal opportunity and physical democracy. We're not in the market for that old stuff. Down with

the old; up with the new! Don't talk to us about the physical history of America. Don't try to scare us with the laws of physical science. We make the rules here. All God's chillun are going to get 'new kinds of things' in that glistening, glorious era just around the corner. Heil! Halleluliah! Free Enterprise Forever!

WHAT ELSE DO YOU EXPECT?

Out of every 40 adults in the United States, 14 managed to complete their grade school education, 6 managed to get through a high school course, and only 2 managed to complete a College Course. Was this because they could not survive the rigors of higher learning? it was not!

The only bar to learning in these United States is lack of purchasing power. If you don't have the 'price' you don't get the learning. 'Compulsory education' seems to be lacking in both compulsion and education, when only 14 adults out of every 40 in the year 1943 managed to complete the minimum amount of education. (Source of figures from the *Chicago Sun*, Sept. 17, 1943)

'Establishments violating child labor laws have increased 200 percent since 1941. The public does not know that we have solved the labor supply problem in the home front as much by the employment of children as by that of older men and women. One out of four children between 14 and 18 years is now gainfully employed. This has had repercussions on the educational system and is tied up with the delinquency problem, as is also the absence from the home of working mothers.'—L. Metcalf Walling, administrator of the Wage, Hour and Public Contract Division of the U. S. Department of Labor, as reported in the *Chicago Daily News*, May 5, 1944.

Every year farm accidents rob this nation of 20,000 lives and millions of hours of productive farm labor. Around 2,000,000 farm people are injured by accidents each year.—U.S.D.A. Broadcast, July 22, 1944.

'Over one half of Detroit's manpower pool is working on ordnance orders. In the event of alteration of the European military situation, there would be almost an immediate release of large blocks of workers.'—*Iron Age* December 23, 1943.

'The great struggle between economic forces which is going on behind our armies in the field is not a struggle for profit—it is a struggle for domination after the war—New light metals, new forms of transportation, new techniques, may make vast investments obsolete—and so the cartel leaders are gathering from all parts of the world to protect their system of *high prices and low turnover, restricted production and controlled markets—domestic and foreign—*against the new enterprise that is coming after the war.' Thurman Arnold, in *Los Angeles Times* 6/10/43.

BIG HOGS

ALAS! THREE-LITTLE PIGS BECAME THREE





Photo: Courtesy Anheuser Busch

Opinions (philosophy) or measurement (facts)? That is the great question of this age. When granddaddy was in his prime, the age of opinion was in flower. All America enjoyed a free ride on the expanding growth curve of technology for about 150 years. We came to think that our opinions had something to do with it. That delusion will soon be rectified. Today's problems won't yield to debates around a pot-bellied stove in a general store. Look back at the past in this picture; it's gone for good.



Soil Conservation Service Photo

Here is another scene that will soon be in limbo also. King Cotton's tyranny over 2,000,000 tenant families of the South is coming to an early end. His scepter is falling to technology. One cotton picking machine displaces 50 to 75 workers. Are we prepared to cope with this social problem? Not unless we give up our opinions and measure the facts. The coming reign of technology will be much easier on the human components involved than was the ages long tyranny of human toil in the past.



U. S. Forest Service Photo

Here is something memorable accomplished by the unrestricted exercise of opinions. Timber cut or destroyed in 1943 was 50 percent more than total growth. The volume of standing saw timber in the U. S. has been reduced by 40 percent in the last 30 years. The 'right' of 'free enterprise' to denude the nation's forests is intimately related to our disappearing top soil and to the diminishing quantities of available fresh water in many communities. Waste not, profit not. That's good business in our time.



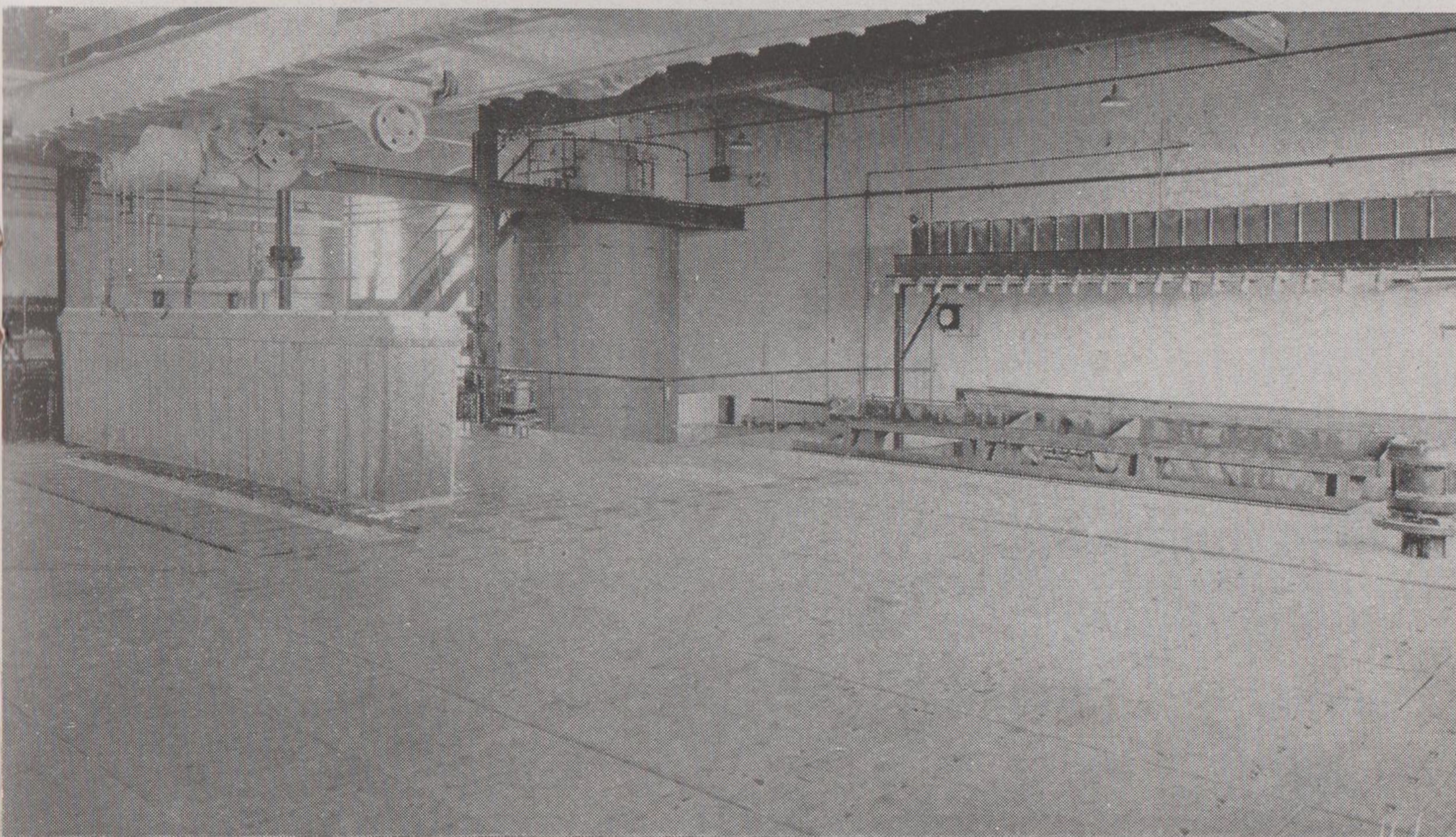
U. S. Forest Service Photo

Modern industry depends on water. The Water Resources Branch of U. S. Geological Survey is calling attention to the falling underground water table; the Forest Service points to our disappearing forests; the Soil Conservation Service complains about land erosion. But, 'free enterprise' continues to sabotage the nation's future economic life. This scene shows what can be done in proper cutting and reforestation. Opinions or facts; philosophy or measurement; deserts or fertility take your choice.



Photo: Courtesy Houdaille-Hershey Corporation

The ice harvest of yesterday was characterized by human toil and hand tools. In 1943, 11,000,000 American homes used 9,000,000 tons of ice. Industry used 31,000,000 tons. The old method is inadequate today. The first ice making plant was built in New Orleans in 1868. In 1942 the industry employed a peak of 150,000 workers. It used energy equivalent to 1,380,000,000 workers, or 138,000,000 horsepower. Payrolls represented 48.28 percent of all operating costs; power supplies only 10.4 percent.



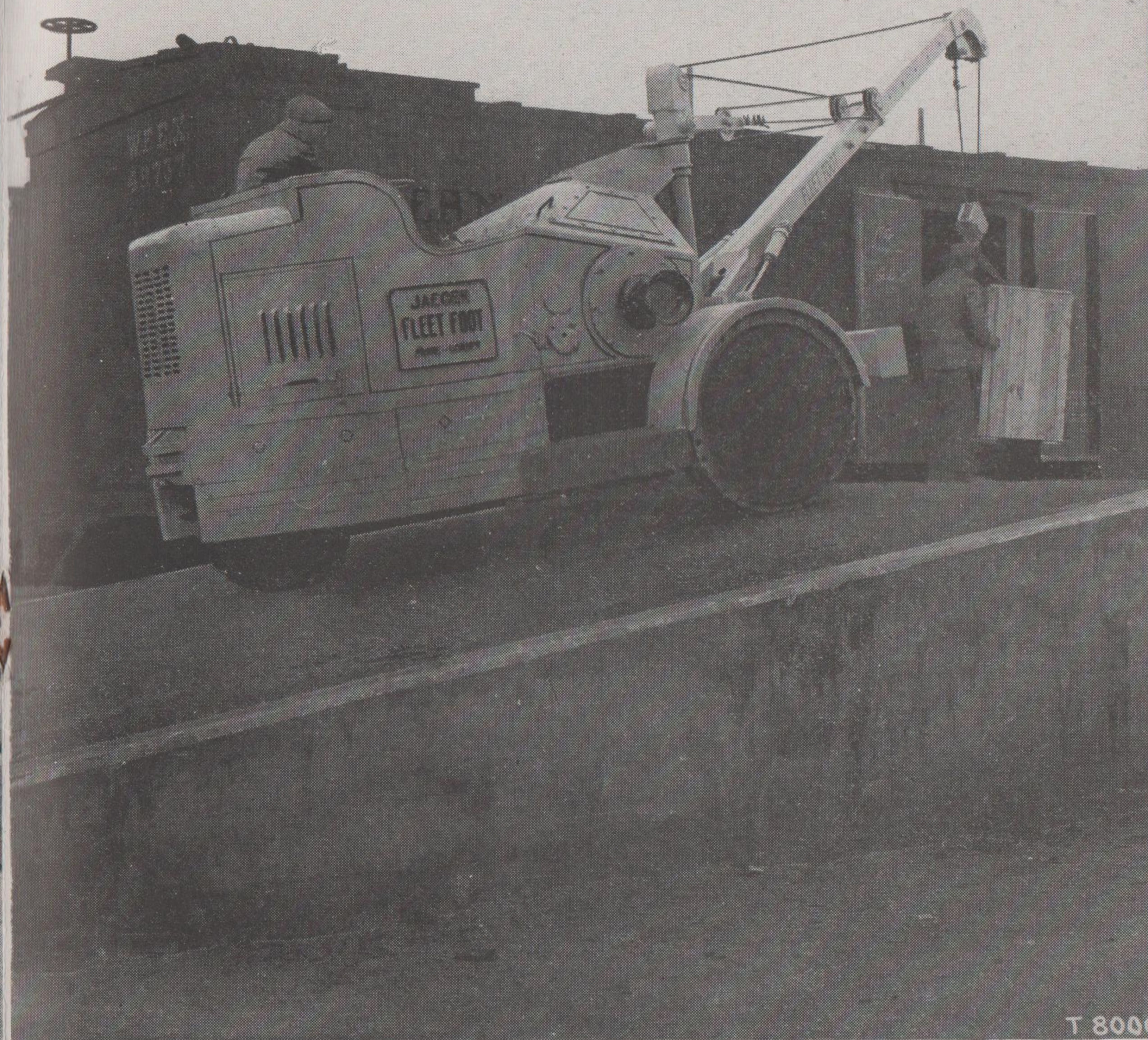
Courtesy of York Ice Machinery Corporation, York, Pa.

The ice harvest of today goes on all the year around. America's 6,500 ice plants have a daily capacity of 298,000 tons of ice. Operating at less than 40 percent of capacity in 1943 they produced 40,000,000 tons. Some items used are: over 70,000 motor trucks and cars; 83,000 electric motors; 12,000 ammonia compressors; 360,000,000 pounds of salt and calcium; 15,000,000 pounds of ammonia; 21,000 miles of pipe, etc. Total installed horsepower of primary and secondary movers is over 1,000,000.



Signal Corps Photo

'Perplexed no more with human or divine, Tomorrow's tangle to the winds resign.' Thus opined Omar Khayyam, the astronomer-poet of Persia, over 800 years ago. Nothing much has changed in that country since then. It is still a land of human toil and hand tools, plus plenty of opinions. Here, laborers of the Persian Gulf Command, U. S. Army, unload American flour on its way to Russia under Lend-Lease. U. S. Army operates the Iranian R.R. between the Persian gulf and Soviet supply depots in the North.



T 8000

Photo: Courtesy Jaeger Machine Company

Here's the American way to handle material. One man operating this shop and yard crane can move up to 5 tons at speeds up to 12 miles per hour. The crane carries, pushes, pulls, places or stacks any type of material. Its 12 to 18 foot long boom can be equipped with a $1\frac{1}{2}$ yard bucket for moving dirt, etc.; or with a magnet for loading scrap. The load is centered on the driven wheels giving greatest stability and traction. No guesswork here; no opinions; it's all measurement. Design is its essence.

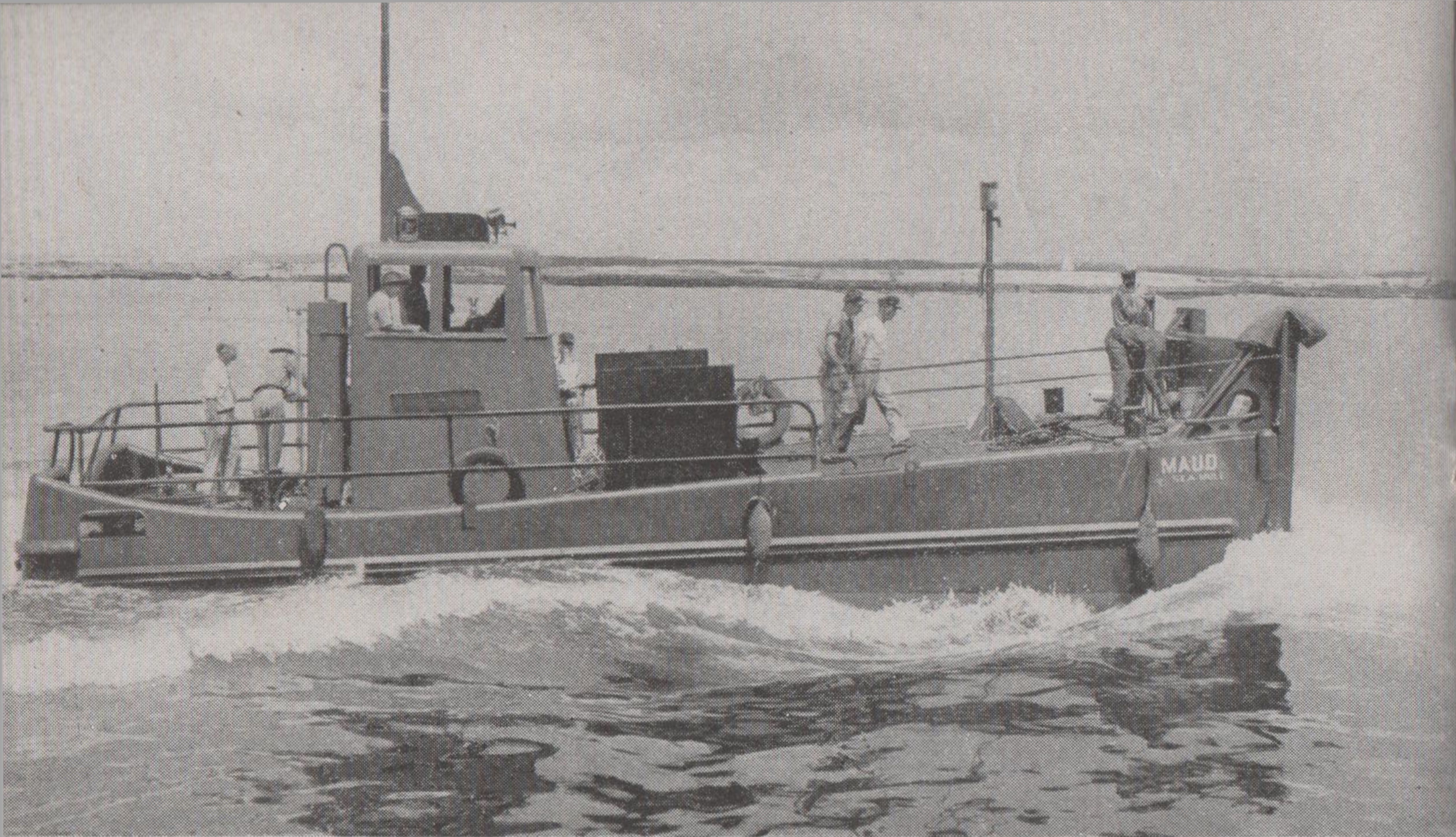


Photo: Courtesy Ingalls Iron Works Company Inc.

Here is one version of the Sea Mule, highly maneuverable, fast and easy to operate. It has the power of a steam or Diesel tugboat four times its size, but needs a crew of only two men instead of six. It is a flat bottomed 40 foot long, 15 foot wide, 6 foot draft, 572 h.p. gasoline powered, twin screw, heavy steel, all-welded work boat. Prefabricated, it is built and shipped in two sections and can be either bolted or welded together at point of use. In light traffic one man can handle the Sea Mule.

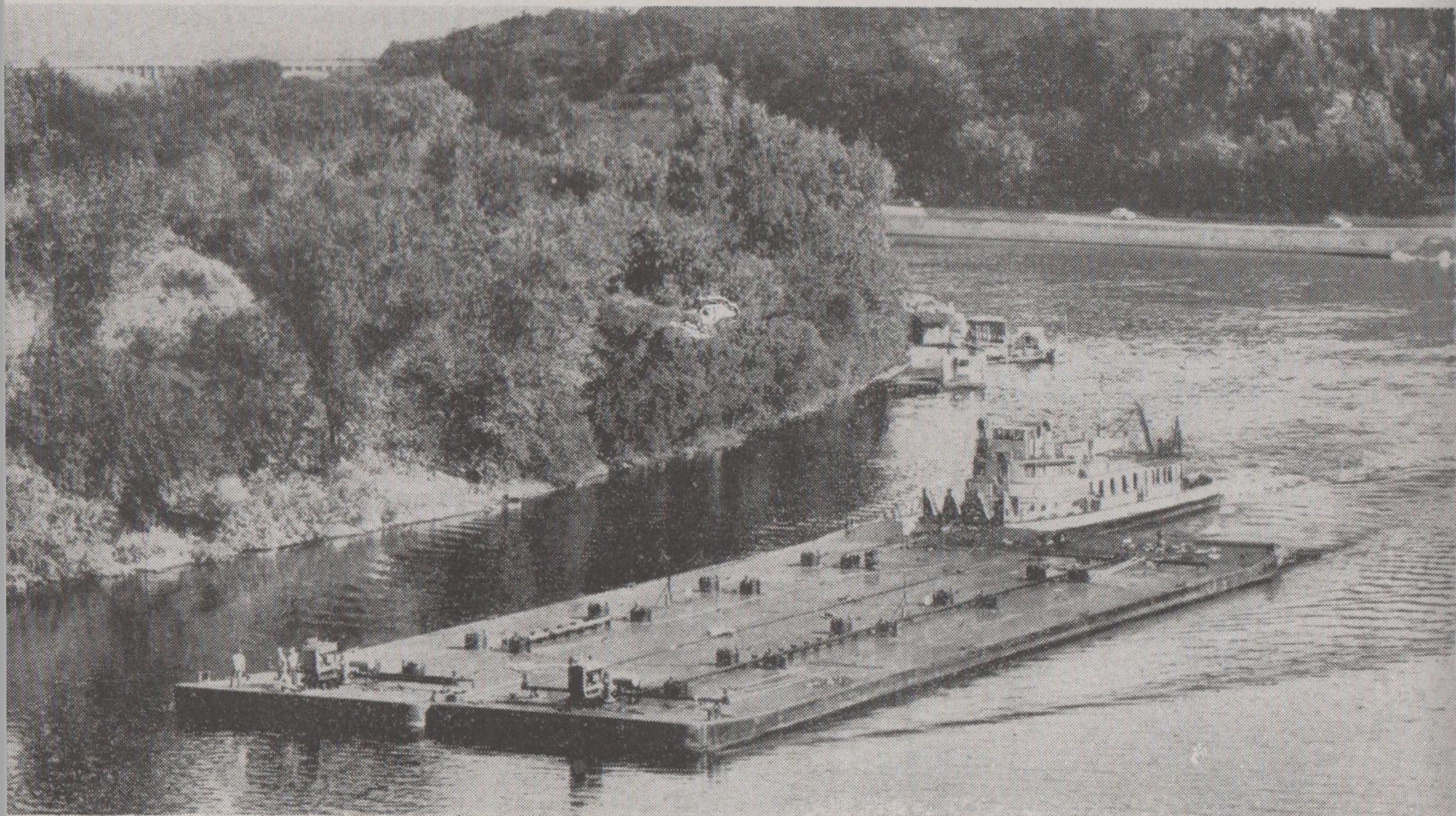


Photo: Courtesy The Pure Oil Company

The Anker L. Christey towboat pushing two oil barges around a bend in the upper Mississippi. It is a 108 foot long, 30 foot wide, V-bottomed, triple screw, 1200 h.p. Diesel boat, with a crew of 12 men. Tow load is 32,000 barrels of gasoline at a land speed of 9.21 m.p.h. It has hydraulic, single lever control of engines and rudders. Waterways are the most economical means of transportation for bulk freight. For a scientific discussion of its possibilities see A-17 *Technocracy* magazine, October 1939.

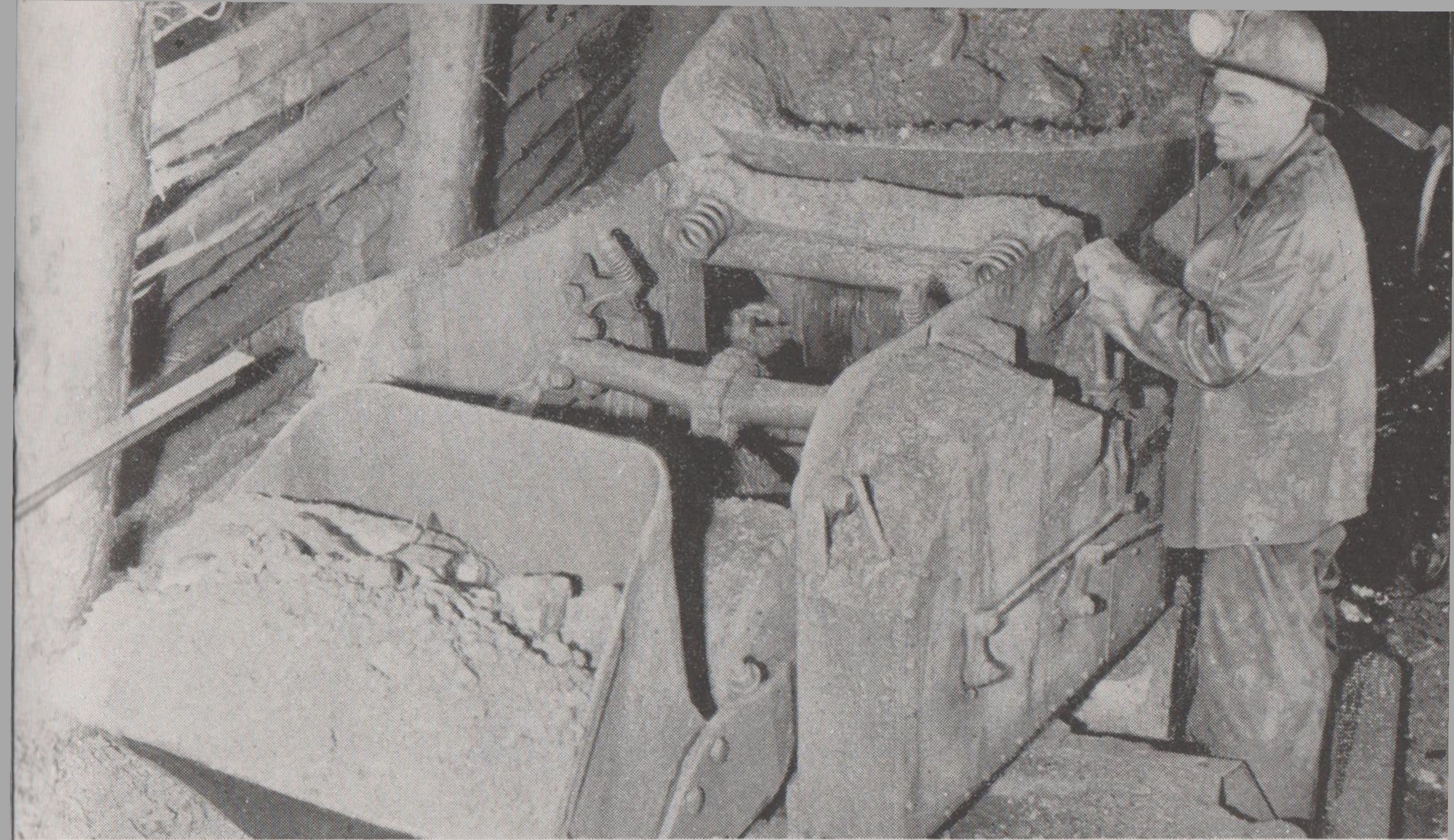


Photo: Courtesy The Eimco Corporation

'And I learned about minin' from that.' Here is the Rocker Shovel, powered either by compressed air or electricity. It has a one-half yard bucket. The operation is an overhead arm action that throws the rock into the loading car behind. This model with one man tending it will load up to 5 tons per minute. A husky mucker with a shovel is good if he can muck 4 tons per hour. From the neck on down a man is worth about 1/10th of a horsepower. As measurement proceeds, the validity of opinions declines. See?



Photo: Courtesy The American Brass Company

Here is a splendid example of measurement, the Extensometer. Tensile strength, elongation, yield strength and other data of copper alloys are determined by this precision tension testing machine. Note the attendant's attitudes. There's no guesswork or opinions here. Facts dictate. It's just about time this attitude was carried over into the field of social problems. Their complexity and magnitude today invalidates opinions and philosophy, and demands the scientific approach.



Official U. S. Army Photo

Caterpillar D-8 bulldozer with armored cab, filling up a shell crater. These are used in close proximity to actual fighting. Opinions may have held that armored cabs were an unnecessary luxury for bulldozer operators. Perhaps many had to die before the facts dictated otherwise. In war or postwar America's problem is the same. Opinions are becoming too costly a luxury. Observation, research and experiment must replace *a priori* reason, logic and discussion. Let's find the facts. Let them decide.



Official Photo U. S. Air Forces

A waterproofed jeep undergoing tests in a stream. The jeep was not waterproofed with anybody's opinions, but with an asbestos compound applied to vital parts. There is a formula ready for protecting America's social structure against postwar collapse. It was compounded from a physical appraisal of American history and a scientific analysis of her social problems. The formula is Total Conscription of Men, Machines, Materiel and Money, with National Service from All and Profits to None.

And the Blind Shall See

DIALOGUE ON AMERICA

by Lilly Yngve

Time: Now.

Scene: Any old home town in America. The only specifications are that there must be a house on the edge of town. It fronts on a fresh water lake, just wide enough so that the further shore is dimly visible. A line of hills rears up on the distant side. To the back of the house is a cornfield and a cow pasture. On the front lawn, stretching from the house down to the shore, is a grove of pine trees.

A convalescing American soldier is resting in a hammock stretched between two trees. He has just awakened from a nap and is gazing lazily at his surroundings. It is early afternoon. Here and there, a motor boat scoots along far out on the lake, with exhausts echoing sharply. White patches over the water mark the sails of catboats tacking along more slowly with the wind. Closer in to shore a few hopeful fishermen loiter in rowboats. A squirrel clambers up a nearby tree trunk, peering inquisitively at the soldier. Suddenly, from out of nowhere, a dog rushes up to the hammock and starts barking and jumping around. A smile comes over the soldier's face and he sits up in the hammock. Then a voice calls out from the other side of the lawn:

Here, Whitey, you scoundrel, now you woke him up! Sorry, Arthur, the leash slipped out of my hand and that dog of yours made a beeline for the hammock. I couldn't help it.

Art: No harm done, Jim, I couldn't sleep much anyway. I don't want to waste my time taking afternoon naps anymore. There is so much to see and enjoy.

Jim: You better behave and get your sleep; them's Doctor's orders, my boy.

Art: To hell with that! I've got my strength back, most of it, anyhow, and I'm learning to walk rather well, if I do say so myself.

Jim: You're doing fine, but take it easy, fellow. That was no caress you got from that 20 mm. shell.

Art: I admit that, and parachuting into the cold North Sea with my left leg shot up was no picnic. I was more dead than alive when that British patrol boat picked me up.

But it doesn't bother me anymore. I'm perfectly calm and quite willing to go up in a plane again.

Jim: You're going to stay right here by the lake and rest. Just get the scent of these pines; and do you notice the blue of the distant hills across the lake. Behold behind you the fields of corn swaying in the

wind, and the cattle grazing in the pasture, and forget about airplanes for a while.

Art: I'm taking it all in, Jim; and that's why I want to fly again.

Jim: I don't understand what you're driving at.

Art, making a wide sweep with his arm: This is a part of America, your country and my country. I traveled a great many miles and saw a large portion of this Continent before I got back to this spot we call home. I had plenty of time on the journey to observe, read and think.

We passed through industrial centers where the world's finest physical equipment is gathered. I saw a huge dam with a hydroelectric installation that generates power used many miles away in the industrial centers.

I was greatly impressed as our train virtually plowed for hundreds of miles through a vast sea of wheat and corn. A fellow passenger informed me that our temperate zone grows one-half of the wheat and three-fifths of the corn in the world. He showed me a picture of a cotton-picking machine in a magazine, and pointed out that the 'contraption,' as he called it, displaced the labor of 70 men.

We've just about got everything on this Continent, Jim, even tropical stuff. Right in our own backyard we have plenty of tea, coffee, sugar, bananas, cocoa, chicle, rubber and a mess of other things. Do you know that the Quinine bush grows wild in Peru, Colombia, Ecuador and Bolivia?

There is no reason why our women who want silk stockings should not have them, because the silk worms can be cultivated in Mexico, the Central American Plateaus and even north as far as the Great Salt Lake. Four hundred and twenty-four million acres of our land grows hardwood. Think of it! I haven't told you about the great herds of cattle grazing on our western plains; and how much oil we produce and of the minerals, and I haven't mentioned that land far up North, waiting to pour out its horn of plenty. I mean Alaska, with a wealth of resources yet untapped. And now do you see what I'm driving at, Jim, and why I want to fly again? WE, the people of the North American Continent, have got something here, something worthy of defending. All this is mine and yours, and every citizen's, and the heritage of our children.

Jim: You're damn right, brother, it's magnificent; but you are not going up in any old hunk o' junk again, if I can prevent it.

Art (turning red in the face): Hunk o' junk! Ye Gods, man! You are not by any chance referring to my Flying Fortress 'Bold Eagle,' that saw me through so many missions over enemy territory.

Jim: I'm not joking. I've listened to you with great interest. You have learned your lesson the hard way. I mean, to appreciate America, the beautiful, and to see her potentialities. But you still haven't learned enough! You admire our technology. You have thrilled at the controls of your Fortress. All well and good.

As a test pilot, I've handled some pretty nifty numbers myself. But I'm not satisfied with what we are doing, because I know how much better we can do when we quit using hand tools and human toil and really get down to applying technology.

Art: We're doing fine, I think. At least, you'll have to admit we're doing much better than the other side.

Jim: Yes, that's correct, but we're doing it the hard and expensive way, the Price System way.

Art: Well, we have to work with what we have, Price System, or no Price System.

Jim: Correct again, my fast learning brother. The point is, we're not using what we already have because of Price System interference. We're operating far below our real capacity and skill. Here, I want to show you these two leaflets as evidence.

Art: (reading aloud): Technocracy urges Total Conscription of Men, Machines, Materiel and Money, with National Service from All and Profits to None. What's this? What does it mean?

Jim: It means just what it says that we Unite and Operate all our physical equipment in all the industrial areas on a non-profit basis. It means putting agriculture on a scientific basis, which will increase its output at least 50 percent, on far less acreage. It means utilizing our natural resources in an intelligent manner, that is, without waste and with an eye toward the future. It means the freezing of our monetary system of price and value for the duration

and for six months after the war is over. It means winning the war in the shortest possible time at the lowest possible cost. Total Conscription will also assure a peace without disaster on the home front because it will liquidate pro-fascism at home. Another thing that might interest you, my dear Mr. Aviator, is this. Total Conscription will free aviation from the Price System shackles which are retarding its development and as I mentioned before, you won't have to go up in anything but the best that technology can devise. In other words, the planes we are using today are not worthy representatives of this scientific age.

Art (bristling with indignation): Not worthy representatives! What are you talking about? Why, the P-47 rolled off the assembly line like nobody's business and was delivered where they were most needed in two shakes of a cat's tail. And now the wings are mounted and all eight machine guns boresighted even before the wings are attached to the fuselage. This is a great step forward, believe me. Furthermore, the P-47 is a qualified, high altitude fighter, dive bomber and hedge-hopping strafing plane. Its range has been increased from 315 to more than 400 miles per hour. The whole plane has been streamlined, no ridgepoles or window frames obstruct the view in the new 'bubble canopy' and the flat bullet proof wind shield allows for better forward vision.

And here you talk as if we are old-fashioned as hell. We've increased our armament and bombloads from

time to time, and do you know that the USAAF dropped about a million tons of bombs on axis territories from Pearl Harbor through 1944.

Jim: Not bad! After all, one cannot expect too much of the old Price System, but what a waste of time!

Art: Waste of time! Man! Don't you realize that we have had such things as submarine infested oceans, mountains, jungles and lack of roads to contend with when transporting war equipment and materiel to our fighting forces, thousands of miles away?

Jim: Yes, I realize all that, and I know what an enormous task confronted our forces in China, how they had to wait and wait for the supplies to come through. They won their victories the hard way. The transportation problem could have been and can still be made very simple by utilizing our technology to its fullest extent. This can be done by producing gigantic bombers which can also be converted into freighters of the sky by removing the bomb-racks.

I am referring to Technocracy's Flying Wing Bomber. Ever hear of it?

Art: No; what's it like?

Jim: There is a picture of it on this leaflet.

Art: Hm; 12,000 miles; ceiling 35-40,000 feet; wingspread 330 feet; speed over 300 miles per hour; bombload 50 tons. Boy! That's a plane!

Jim: You bet. All we need is 24,000 Flying Wings which would provide a fleet, consisting of 1,100

bombers for each of the main bases surrounding this Continent. A single Fleet would carry a bombload of 55,000 tons, or 110,000 half-ton bombs.

Six fleets from one coast, leaving the others in reserve, would consist of 6,600 planes, carrying 330,000 tons of bombs. You mentioned that the USAAF dropped 1,000,000 tons on axis territories from Pearl Harbor through 1944. Well, six fleets of Flying Wings could drop 1,320,000 tons of bombs in four missions, each trip taking not more than 40 hours. So, in approximately 160 hours, or less than a week, the Flying Wings would drop more than what our present type of planes have done in about three years.

Art: I'm absolutely flabbergasted. Why, it seems impossible! But I imagine that it would take years to build these giants.

Jim: Not at all. The Flying Wing is designed for mass production, utilizing plastics to a great extent. No rivets or hand methods would enter into its construction. They would roll off the assembly line at unprecedented speed. All machinery and facilities are within the aerodynamically designed wing itself. As you notice, there is no fuselage.

Art: What kind of propellers will she use?

Jim: Pusher type, eight of them, with two on each shaft, and it will be powered by huge multimotors. These Flying Wings are independent of an escort because they would be heavily armed and have many

times the fire power of the Fortress or any other bomber. An enemy plane would be blown to smithereens before it came within its own range.

Art: You say that it can carry 50 tons of bombs. How many men would it hold?

Jim: Three hundred fully equipped men, or two 25 ton tanks, can be transported over a distance of 6,000 miles in about 20 hours. The Wing can then return to its base without refueling. Distance to any part of the world is not figured in miles any more, but in hours. Now, do you understand what I meant by waste of time, a while ago?

Art: I give in. It's difficult for me to visualize even one fleet of these enormous Flying Wings. A city like Berlin, Rome or Tokyo would be no more after one single raid. How long could the fascist world continue such a fight against America? They just couldn't.

Jim: When these bombers are built, the war will be won more quickly, with less cost and, last but not least, thousands of lives will be saved. America must lead and not follow in the science of aeronautics. Technocracy presents these specifications of the Flying Wing Bomber for the security of America. Total Conscription opens wide the door of technology and sweeps pressure groups, vested interests and internal fascist sabotage out of the way.

Art (getting up and extending his hand): I'm one hundred percent for Total Conscription of Men, Machines, Materiel and Money, with National Service for All and Profit to None.

The two men walked slowly towards the house, Jim helping his brother up the stairs to the front porch.

At the door, Art turned around and looked back toward the lake and the distant hills.

More to himself than to Jim, he exclaimed:

'Now, I know what that sentence meant in one of those Technocracy magazines you sent me.'

'What sentence was that, Art?' replied Jim, softly.

Looking off in the distance, Art recited from memory: 'America is the number one technological potential of the world; and the aspirations of human society on this Continent must be the projection of the technological pattern of this Area.'

'It's as clear as day now. America is not politics, it's not business, it's not ecclesiasticism, It's not flag waving, it's not the Price System, it's not doing things the old, hard way by human toil and hand tools.

'America is the structure of a new society within the shell of the old, imported European social system. America is Science and Technology. It's a new order of the Ages, a new civilization struggling to be born.'

'That's it, exactly,' said Jim, as he opened the door.

Far out on the lake, the rapid pop, pop, pop of a motor boat with wide open exhaust echoed sharply across the water. The sounds put a series of fitting periods to the scene as the two men entered the house.

Business First

Reprinted by Permission from *American Lumberman Magazine*, May 27, 1944

(Title and Italics Ours)

We believe that lumber for the Army and Navy, lumber needed by those forces to carry on vitally necessary operations against our enemies, should be supplied immediately *after* certain *other needs* for lumber have been satisfied. Chief among these *other needs* is shelter for horses at race tracks, and canopies over country club swimming pools.

We have urged consistently in connection with lumber use in time of war that first needs comes first, and while it is important to supply our armed forces with the lumber necessary to carry on military operations against our enemies, no one will doubt the *primary essentiality* of continuing horse racing at the usual high standards. And no one can doubt the equal essentiality of shelter from the piercing rays of the summer sun for war weary pool bathers. What will it avail us to win the war *at the price* of some slackening in the horse racing business, or at the price of keeping pool bathers out of the pools on hot, sunny days. Nothing, of course. Our first duty is to keep things running pleasantly and smoothly at home, even if such activity does require an occasional few hundred thousand feet of lumber the Army and Navy are crying for.

A few days ago we were happy to note the activity at the Washington Park Jockey Club near Chicago. The

ends of two stable buildings had been detached and moved about 150 feet out. Lumber, new lumber, was being delivered and piled for what looked like two 150-foot extensions of stable buildings approximately 30 to 40 feet wide. Then, there were some stakes nearby indicating that perhaps two new stable buildings about 200 feet long were to be built. We hope the evidence reflects our deductions. We also heard that bids would be received soon to put a canopy or shelter for bathers at the pool of a Chicago golf club. We hope that goes ahead.

After all, Colonel Sherrill and Lt. Comm. Kellogg are only several hundred million feet behind in their lumber requirements for the impending battle of Europe, and the Jockey Club probably will need *only* 500,000 feet of lumber to keep the horses running.

It will take quite a few projects such as this seems to be to equal the Army and Navy needs. *At most that half million feet can require the lives of only a few dozen American boys.*

And anyway, who wouldn't prefer to be a happy Nazi slave rather than a free American forced to bathe in the sun, and with limitations on horse racing. Or is the war over?

A statistician is a man who draws a mathematically precise line from an unwarranted assumption to a foregone conclusion.

Primer of Technocracy

by Education Division 8741-1

After having given but the briefest outline of the methods of Technocracy, analysis and synthesis, we now take up a short illustration of the operations of Technocracy. This series began a year ago. There is enough material available to continue it indefinitely. The Body of Thought of Technocracy is the fastest growing branch on the great, spreading tree of science. Technocracy touches almost all phases of modern life somewhere.

Operations of Technocracy

The analogy between science and Technocracy carries through from analysis to synthesis to operations. This last step in the methods of Technocracy is the application of the principles contained in the synthesis, on the basis of probability. This is an accurate reflection of the dynamic side of science. When any individual or organization is confronted with a problem, it is necessary to employ the scientific method for maximum results. This involves three steps as has been shown. First, one examines the elements of the problem, or finds the facts. This precedes everything else. Next, it is necessary to synthesize and interpret the facts, including the elaboration of principles and conclusions. Up to this point, we have merely been making decisions building up to our solution. Finally,

it is necessary if one is to solve the problem to act upon the basis of the conclusions and principles. In other words, it is not enough to study and know; one must also do. The object of knowledge is action. The application of the scientific method to the phenomena of the physical world has resulted in the body of verifiable knowledge called science. This application of this verifiable knowledge, by means of the scientific method, to the problem of man's relation to the physical world from which the knowledge was obtained will result in a solution of his social problems. This is the great contribution of Technocracy.

Most of the primary inventions of the first stage of the industrial revolution were effected by trial and error or hit and miss, mixed with a dash of the scientific method. But today the great advances of science are being made by those individuals and institutions using the disciplined methods of science. This is just as true in the social field as anywhere else. Witness the great number of trial and error political plans, and hit and miss social panaceas that have fallen by the wayside in the past. This should be enough to convince any one that no moral wave of protest, no emotional upsurge of humanity, no socio-economic political nostrums can solve America's problems. They are antithetical to the scientific method.

Technocracy Inc. is not that kind of an organization. It didn't just grow up like Topsy. It was carefully designed by the originators of the Body of Thought of Technocracy. Just how carefully it was designed we will presently see. The primary function of the organization is to transmit the principles of Technocracy to the American people. Thus, we see that the organization of Technocracy is the operational part of its methods. From this it follows that Technocracy as a whole is the instrument of the social aspect of science as a whole. It can lay claim to that distinction because it is the only movement in America designed to function in that way. That is why and where Technocracy and its organization differs from every other social movement and Price System organization in existence. Many interesting sequelae follow from this uniqueness.

The analogy between the threefold nature and methods of science and their accurate reflection in Technocracy extends even into the structure and the internal mechanism of the organization. This may sound incredible at first. Actually, it is an integral and necessary part of the whole design. The parallel in the mechanism of the organization with the analytic, synthetic and operational steps of the methods of science and Technocracy is illustrated by the functions assigned to the seven standing Committees with which each Section, or local unit, of Technocracy, is staffed. These Committees: (a) New Membership; (b) Educa-

tion; (c) Research; (d) Finance; (e) Speakers; (f) Publications; and (g) Organization. Now, let's see how these Committees parallel the characteristics and methods of science and Technocracy. The primary characteristics of science and Technocracy is the step of analysis. This is reflected in the Research Committee which is charged with collecting information, statistics and data for the use of the organization. The potential characteristic of science and Technocracy, which is the step of synthesis, is reflected in the Education and New Membership Committees. The Education Committee conducts Study Classes to instill a working knowledge of science and Technocracy into members. The New Membership Committee is charged with inducting and integrating new members into the mechanism of the organization. Both of these functions are clearly synthetic, since up to this point the member is not yet ready for the final baptism of action in the outside activities of the organization. This is where the Public Speaking, Publications, Organization and Finance Committees come in. They represent the operational characteristics and methods of science and Technocracy, for they actually transmit Technocracy directly to the body of people outside of the organization. This is accomplished by public lectures and home meetings, by contributions to Technocracy literature and by effecting a wider distribution of that literature, and by articles and letters to the Price System press; by organizational activities in new areas,

and by social affairs and person to person communication.

It is not strange that the designers of the Organization set up four out of seven committees to carry out the operational step of Technocracy. It would be strange if the emphasis were not placed on action. Of course, all seven standing committees engage

in analysis, synthesis and operations triply in their internal functioning. This classification is based upon their predominant characteristics as units of the threefold method of Technocracy.

Next Issue: All voluntary and racket proof.

THERE IS A SURE WAY OUT

'Most of us think of free enterprise as a system in which prices are set by competition and the law of supply and demand. Unfortunately, before the war this concept was true in only part of our economy. In too many industries prices were held up artificially in order to provide higher unit profits. Because of this policy in some industries full production and employment were curbed. . . . Before the war few of us realized the tremendous productive power of our American economy. The fact that this miracle of production has been achieved during wartime will have a significant influence on our peacetime industrial planning. It is unlikely after the war that our people, including our 11,000,000 returning service men, will long tolerate any economic system which does not provide reasonably full production with reasonably full employment at a high standard of wages and farm income. As a practical matter, we cannot go back to the production levels of 1940. The Department of Commerce recently estimated that if in 1946 we were to go back to 1940 total production at 1940 hours of labor there would be 19,000,000 unemployed. . . . Such an economic reversal would mean shrinking markets and falling prices for farm products as well as the products of our factories. It would mean that our farmers, our workers, and our returning soldiers would again have to compete bitterly with each other for their frugal individual shares of economic scarcity.'—Chester Bowles, OPA Administrator, in a Memorandum to all Members of OPA Advisory Committees, dated October, 1944.

'If postwar plans were to be followed by each company engaged in war production, it is estimated by some sources that 20,000,000 persons will be thrown out of work. At the height of the depression between 14 and 15 million persons were without steady work. If peace brings us 20,000,000 unemployed, even including millions of women who never worked in factories before the war, I shudder to think of the abyss into which this country will plunge, should this period of unemployment be long lasting.'

—Col. Willard F. Rockwell, chairman of the board, *Timken-Detroit Axle Co.*, *Standard Steel Spring Co.*, *Pittsburgh Equitable Meter Co.*, and *Hupp Motor Car Corp.* From his article 'Is Peace to Bring Us 20,000,000 Unemployed?' in Aug. 1944, *Marine News* magazine.

'Unless an economic substitute is found for war contracts, mass unemployment will become a serious threat and the number of unemployed men and women in this country could easily surpass anything that was dreamed of during the last depression.'—Extract from report of the War Contract Subcommittee of the Senate Committee on Military Affairs in support of the so-called 'Full Employment' Bill.

The energy available from America's current output of petroleum is equivalent to the work of four and one-half billion men laboring eight hours a day, six days a week, or two-and-a-half times the population of the earth on an ordinary shift. (From Science Digest, November 1944)

Technology Marches On!

As Sure as the Sun Rises
by Research Division 8741-1

Resources

Tin has been discovered in the Duncan River area of British Columbia. About 3,000 pounds is already produced daily at Kimberly, B. C. (*The Mining Record*, November 16, 1944). *Ed. Note:* When will they 'discover' the large deposit of tin in Harney County, Oregon. See *Technocrat* magazine, August and September 1941.

Materials Handling

Materials are worked only 35 to 40 percent of the time with 60 to 65 percent of all manufacturing time devoted to handling operations. Six men worked 9 hours each to unload and store a carload of lumber. Now, with a lift truck, one man does the job in 8 hours. Net saving is 48 man-hours of labor. (*Industrial Truck Statistical Association*, July 22, 1944) *Ed. Note:* See *Man-Hours and Distribution*, page 16, last paragraph.

Measuring Time

An electronic chronoscope has been perfected by Dr. Frederick W. Brown and Carrol R. Nisewanger, two physicists at the Pittsburg office of the U. S. Bureau of Mines. The instrument measures time intervals 250,000 times shorter than the blink of an eye. It is portable, for field tests, and an unskilled operator can learn to use it in an hour. The

chronoscope is used to measure the velocities of seismic waves in solids, liquids and gases and other operations where infinitesimal fractions of seconds are of the essence. (U. S. Department of The Interior, November 29, 1944). *Ed. Note:* See *Science and Society*, page 22, last paragraph.

Electronic Gun Locator

U. S. Artillery uses a sound measuring system for locating the exact position of enemy guns miles away. It also permits adjustment of our shell fire to coincide with the position of the enemy gun. A half dozen sound ranging microphones are set up at intervals of 2,000 yards. These are connected to the central station by wire or radio. The signal (enemy gunfire) is picked up by the microphones and sent to the central station where it is recorded photographically by an oscillograph. The position of the enemy gun is determined by geometric calculations of the differences in time of arrival of the signal at the six microphones. Deviations of the sound waves due to atmospheric conditions are corrected by meteorological techniques.

(*Radio-Craft*, January 1945) *Ed. Note:* See *Technocracy Magazine*, Series A, No. 13, page 4, second to last paragraph, first column.

Rockets

The U. S. Navy's new LCT(R)

landing craft, tank, rocket ship has two and a half times the fire power of a 45,000 ton battleship. It carries three types of rockets; the high explosive type, of which a 5 inch rocket has the explosive power of a 155 mm shell; the incendiary type for starting fires and fixing the accuracy of the range; and a smoke rocket for screening troops. *Ed. Note:* See same reference in A-13 and next paragraph following.

Turbines

The Pennsylvania Railroad has announced completion of a coal burning steam turbine passenger locomotive. Power is delivered to the wheels by gears. It is said that 97 percent of the turbine's output reaches the driving wheels. Advantages of the turbine locomotive over the conventional type with cylinders, pistons and driving rods, comes about as a result of the elimination of reciprocating parts, very low track wear due to a smooth flow of power and *general operating economies*. (*Cleveland Plain Dealer*, November 29, 1944. *Ed. Note:* See *Introduction to Technocracy*, page 24, second paragraph.

Laundry

The U. S. Army's Medical Department has developed a process for doing laundry with sea water. The process will be introduced for use on troop and hospital ships. A recent test on a hospital ship showed a saving of 4,480 gallons of fresh water a day. There was a reduction in the linen inventory ordinarily carried of from 30,000 bedsheets to

8,700, or total reduction of 21,300 sheets. This left room for 4 more bed cases and 10 more ambulatory cases than the ship could ordinarily carry; not to mention the space saved through reducing the bulk of fresh water necessary at sea. (*Ships magazine*, November 1944). *Ed. Note:* See *Technocracy Study Course*, page 103, second paragraph.

Man-Hours of Labor

'In 1944 it required exactly one twentieth as many man-hours to build one of these planes (Douglas A-20) as in 1940.' Pounds of airplane per working employee per year rose from 490 in 1940 to 2,900 in 1944. (*Douglas Airview*, November 1944)

American factories delivered 96,369 planes of all types in 1944. This is an increase of 11,423 planes over the output of 1943. Figuring by weight it is an increase of 50 percent. Since July 1940, 243,256 planes have been produced. (*Chicago Daily News*, January 4, 1945) *Ed. Note:* See *Man-Hours and Distribution*, page 10, paragraph three.

Canada

The National Research Council of Canada at Ottawa has announced several new developments. Among these are a method for coating airplane windshields to keep them clear of ice. The process is based on the law of electrical polarity that like charges repel each other. Briefly, every particle of matter in the universe carries a charge of electricity, either positive or negative. The ma-

terial in question is applied to the windshield. It carries the same charge as raindrops. When rain strikes the windshield, it is repelled so energetically as to 'explode,' leaving the glass clear.

Another spectacular job of the Research Council is the utilization of hydroponics, growing vegetables in tanks of chemically treated water, to bring fresh vegetables to troops and essential workers in the frozen wastes of the far north. (*Chicago Daily News*, December 8, 1944).

'Canada's radio and electrical communication equipment (production) has grown in volume in 1944 to \$200 millions, as compared to \$16 millions in prewar years. . . . Average daily production of plants throughout Canada includes 200 transmitter-receivers, 100 radio receivers, 25 radio transmitters, 300 miles of field cable, 200 charging sets, 50 generator sets, 100 amplifiers, etc.' (*Radio News*, January, 1945) *Ed. Note*: See *Technocracy* A-19, page 8, first paragraph.

Food Production

The United States Department of Agriculture, Office of Foreign Agricultural Relations, made a survey of world food production in 30 countries with 60 percent of the world's population. The survey covered 1942 and 1943 and included, among other comestibles, the output of edible oils, meat, poultry, eggs, dairy products, cereals, sugar, fruits and vegetables. Correct data were not available for Russia, China, British Malaya and the Netherlands Indies. It was stated that the indications were

that food production in those areas had declined considerably.

In Western Europe food production declined 6 percent. In the Middle East, it declined 5 percent. In Oceania and South Africa food output rose one percent. In Southern and Eastern Asia it rose 3 percent. In South America it rose 17 percent. But in North America food production for 1942-43 rose 30 percent. (U. S. D. A. release, December 3, 1944.) *Ed. Note*: The report does not add that this 30 percent increase in food production in North America was done on less acreage and with less farm workers. See *A Thermodynamic Interpretation of Social Phenomena* by Howard Scott, page 32, paragraph three.

Birth Certificate

The first patent granted on the North American Continent was handed down by the court 200 years ago. The patent was granted to Joseph Jenks who had settled at Lynn, Mass., in 1643. Here is the exact language (*italics ours*):

'At a generall Courte at Boston the 3th m 1646

'The Co't consid'inge ye necessity of raising such manufactures of engins of mills to go by water for speedy dispatch of much worke with few hands . . . grant his petition . . . & so as it shalbe alwayes in ye pow' of this Co'te to restrain ye exportation of such manufactures . . . if occasion so require.'

(From *New York Journal of Com-*

merce, March 11, 1943.) *Ed. Note:* See *Introduction to Technocracy*, page 14, last paragraph.

Free Power?

Under the title 'Low Cost Power—To Win the War Now—And Then the Peace,' the Cooper-Bessemer Corp. recently advertised in trade magazines that it has 'Power Plants That Never Buy Fuel.' Under a picture of a typical sewage disposal plant, the following statements were made:

This is a story that hits right at the pocket-book of John Q. Public—the story of a fuel and power source wasted in hundreds of American communities. . . . For 18 years . . . engineers have known that modern sewage treatment plants generate millions of cubic feet of inflammable hydro-carbon gases every day. Already in 80 cities this sludge gas drives big internal combustion engines, which are

connected to pumps, blowers, generators, and other necessary plant equipment. Thousands of dollars are saved annually. . . . (in) cities like Cleveland, Madison, Atlanta, Gary and Hammond, etc. . . . and these tax-saving engines are available now for the 1,000 U. S. cities wasting (this source of) power.'

As long ago as April, 1938, it was pointed out in *A-11 Technocracy Magazine*, in an article 'Power Development from Recurrent Resources,' by A. DeLisle (a Technocrat), that the entire sewage disposal systems of American cities can be used for power through the methane gas generated naturally by sewage.

The advantages to Americans lies in the fact that by using recurrent energy sources, such as sewage gas, grain alcohol fuel, and waterpower, we need to mine and transport that much less coal and oil, conserving it for the next Americans.

PAGE EMILY POST

In Cedarhurst, Long Island, a war plant is operating on a strictly non-profit basis. It is a mica processing center. 'All tools and equipment are donated, and the finished product is shipped to Colonial Mica Corporation, an R.F.C. subsidiary.' U. S. Mica Commissioner M. D. Heyman arranged for the raw material. Members of the American Women's Voluntary Service work the afternoon shift. After the demands of the Price System have been met, citizens of the town take over the night shift. 'Farm laborers, lawyers, doctors, judges—these are the "war workers" at this singular war plant whose operations afford a living example of the phrase 'democracy

at work.'—From *Dodge News*. Vol. 10, No. 4.

Ed. Note: What strange goings on, is this? We do not mean the highly commendable efforts of the townsfolk of Cedarhurst. We refer to the highly anomalous behavior of a slick paper, three color, house organ of corporate enterprise in extolling the activities of a non-profit enterprise. 'It just isn't done, you know.' Maybe it's the war. Maybe the editor was short of copy. On the other hand, maybe he suffers from periodic amnesia regarding the true function of a house organ of big business. In any event, ye editor had better watch his step or he may lose his soft, padded berth. Yea, verily!

Technocracy and Your Trade

THE FARM WORKER

by Organization Division 8741-1

'Ho, for the Life of a Farmer!'

In 1850, 71.4 per cent of the U. S. population lived on farms. In 1935 only 23 percent enjoyed that bucolic existence. By 1943 this number had dropped to 21.5 percent. The average number of persons employed in agriculture in 1909 was 12,209,000. In 1939 this had dropped to 10,629,000. In 1944 it was below 10,000,000. Taking 1939 as being 100, the output per farm worker was 66.3 percent in 1909. In 1942 it had risen to 119.6 percent. This illustrates one of the major facts of technology. The only way to produce more is to work less. How is it done?

In 1910 there were about 19,000,000 horses on American farms. The number rose to an all time peak in 1920 with about 23,000,000 work animals. By 1943 'Old Dobbin' had vanished to the extent that there were only 12,000,000 of his species still extant. His place was taken by tractors. In 1910 there were less than 100,000 tractors on all our farms. In 1943 there were about 2,000,000 in operation. This is only one phase of farm technology. As if in further certification of the visible advance of technology on the farm and the declining percentage of the population engaged in farming, the average size of farms has been growing greater ever since 1880. At that time

it was 134 acres. In 1935 it had risen to 155 acres per farm. The trend is toward larger and larger units in agriculture. It couldn't be otherwise, for technology can't be employed on small acreages.

The 1940 census of agriculture reveals the following. Farms smaller than 260 acres in size decreased in number by 694,781 between 1910 and 1940. Farms between 500 and 1,000 acres in size increased from 125,295 to 163,694 in number. Those above 1,000 acres in size more than doubled in number, from 50,135 to 100,531. In 1910 more land was included in the category of 100 to 260 acre farms than in all other sizes put together. By 1940 farms of over 1,000 acres in size comprised more than twice the amount of land in any of the other groups of farms.

The average size of all farms indicated as having risen from 134 acres to 155 acres between 1880 and 1935 does not give an accurate picture. In the total is included over a million 'subsistence' farms which, as a matter of fact, do not furnish even a bare subsistence to their operators. Half of all the farms in the U. S. produce about 89 percent of all the commercial food. The other half produce only 11 percent. In 1929 about 28 percent of all farms produced less than 4 percent of the

food consumed by their operators. Yes, Technology is definitely moving in on American agriculture. There is no use blaming the government. There is no use making a whipping boy out of Congress. Neither of these institutions can prevent the impact of technology.

In 1943 with 10 percent less farm workers than in 1918 and 2 percent less acreage technology produced 50 percent more food than in the latter year. The Department of Agriculture reports that in physical goods used in production, agriculture jumped from a \$49,000,000 industry to a \$70,000,000 industry between 1940 and 1944. But the same old story of Price System mal-distribution still holds good. Fifty percent of all farm families received only 18 percent of the total farm income in 1942; 40 percent of all farm families had an income of less than \$930.00; while the bottom 10 percent received less than \$130.00 per family. In 1942 the big land owners (biggest users of technology), constituting the top 1/10th of all farmers got 1/2 of the total farm income. The bottom 1/10th of farmers got less than 1 percent. It pays to install technology. Below are some examples of recent farm technology.

Cane Harvester

The Louisiana sugar cane crop formerly required about 35,000 workers each season. In 1944 more than 350 mechanical harvesters were on the job doing the work formerly needing 21,360 hand laborers. One cane har-

vester can cut about 10 acres a day. Costs run between 15 cents and 25 cents a ton as compared to \$1.25 a ton for hand labor. How long do you suppose hand labor can compete against such odds?

Cotton Pickers

The Texas Cotton Association has been placing ads in papers and buying time on the radio to advise cotton farmers to plant cotton only on their most productive acres and to mechanize operations as much as possible. It is estimated that one mechanical cotton picker displaces 40 men. At present wage rates, it costs about \$30.00 to pick a 500 pound bale of cotton by hand. The mechanical picker cuts that cost to about \$1.00. Figuring amortization, overhead, depreciation and downgrading, caused by dirty cotton, the saving is at least \$20.00 a bale. There are about 9,000,000 people in the 2,000,000 tenant families of the cotton country. It was estimated by Dean Moberly, a cotton planter at Madison Parish, Louisiana, that 50,000 cotton machines would displace 2,000,000 workers.

International Harvester, John Deere, Allis-Chalmers, Graham Paige and other farm equipment manufacturers will turn out cotton pickers and fire spitting cultivators in volume as soon as possible after the war. It's on the books now. How long will it take them to produce, sell and install 50,000 cotton machines? 'Quicker than a cat can wink her eye' as the old song goes. And, then there's the up and coming rayon in-

dustry giving nightmares to old King Cotton. Yes, Sir, the cotton chopper will soon be in the slums of some more northerly urban center trying to find an answer to that eternal Price System question, 'How shall we live?'

Sugar Beets

Al Jongeneel, a sugar beet farmer in California's lower Sacramento valley, did something about the shortage of stoop labor to thin and harvest sugar beets. He built a beet harvesting machine. It does the work of 10 men. Al figures that it cuts the cost of harvesting from \$2.00 a ton to 20 cents a ton. As early as September, 1943, the government granted priorities for materials; and four big California sugar companies and large beet growers ordered 35 machines. The U. S. Sugar Beet Association has set aside \$200,000 to underwrite further research in agricultural colleges. More recently, on January 5, 1945, Douglas E. Scalley, vice-president and general manager of the Utah-Idaho Sugar Company, announced that beet processors planned to speed up mechanization of the industry's agriculture. 'Eliminating migratory labor in beet fields,' he said, 'is one of the objectives.' Is Mr. Scalley a villain? Not much, the villain is technology.

Corn Pickers

The International Harvester Company announced in its fourth quarterly report for 1944 that it had produced 50 percent more mechanical corn pickers in that period than ever before.

While, at the University of Iowa Agriculture Experiment Station it was announced in December, 1944, that a bushel of corn can be harvested and cribbed for a time expenditure of only 2.7 minutes as compared to the average time among farmers of from 6 to 15 minutes.

Hay Baling

Technologically, haying was 50 years behind the times until U. F. Leubben of Omaha, Nebraska, invented a rotary hay baler. The baler processes 6 tons an hour, with only one man operating it. It scoops the hay up, rolls it into a cylindrical bale, ties it and throws it out, all automatically. The politician, running for office, who used to have his picture taken pitching hay to demonstrate (to his majesty, the voter) how much he liked the simple things of life, will now be out of luck.

Fertilization

The Purdue University Agricultural Experiment Station announced the following in a release dated July, 1943. "If adequate and balanced quantities of nitrogen, phosphate and potash were provided and were used correctly, the farmers of Indiana could produce 85 million more bushels of corn and 32 million more bushels of wheat, oats and soybeans as well as similar figures for other crops without plowing up more land and *without greatly increasing the labor load.*

Think You'll Ever Go Back?

And so it goes. The process is merciless. It is unidirectional and

irreversible. Technology strikes where it wills. No political conniving; no business conspiracies can hold it back. The shaky Price System structure must give way. In this progression the human components involved are shuffled around without any compunction. The problem is not one of moral indignation; it's one of physical measurement and control. Farming as a way of life is on the way out. The only thing that can be done for the farmer is to take him off the land.

By this we mean that farming is now becoming the science of agricultural technology. The old oaken bucket in that deep, cool well under the shade of the Sycamore tree close to the barn, the well-thumbed Almanac hanging by the kitchen stove, the bottle of liniment 'good for man or beast' resting on the window sill, the bedraggled farm wife getting up in the darkness to prepare breakfast, cooking, washing and toiling at odd chores all day and evening long, the fierce independence and the dense ignorance are withering away.

If you want to make a go of it on the land today, you must install

technology. The more, the better. You must scrap the old way of life. The only way to produce more and to get more is to work less. Science envisions gigantic agro-technological units 25 miles square, of about 400,000 acres each. In the center will be a modern urbanate with every facility for civilized living. Agro-chemical technicians will operate the units. Processing plants will be right on the ground where the raw material is raised. Everything will be mechanized to the limit and operated around the clock. Every worker will be guaranteed abundance, distribution, security, short hours of work, and equal opportunity.

This is not farming as we know it now. It is as far ahead of it as the cotton picker is ahead of the Egyptian fellah with his forked stick and his foot powered irrigating device. The mandate of technology speaks to the American farm worker, tenant farmer and 'subsistence' slave, North, South, East and West, in the same language it uses to the industrial worker. Unite, Operate and Prosper—or suffer the consequences!

Investigate Technocracy!

THE PAST DIES HARD

'The peace of the world for the next century may depend on whether there is to be cooperation or conflict between the U. S. and Russia.'—Dr. D. F. Fleming, in *Chicago Herald-American*, April 14, 1944.

'One thing is certain: Europe is headed for an extreme revolution of some form or other. . . . Once the Germans leave, the

old "class struggle" between rich and poor, employer and employed, capital and labor, will *not* be resumed because the war has wiped out the class and property groups that used to engage in these struggles. Western Europe appears to be heading up for the same kind of social upheaval that accompanied the Protestant Reformation.' Quincy Howe, author and CBS Commentator, in *News Digest Magazine*, July 1944.

In the Question Box

by Public Speakers Division 8741-1

This department consists of actual questions asked at Technocracy meetings. Readers are invited to send questions in. Remember, the program of Technocracy since July, 1940, has been Total Conscription.

How would Technocracy tackle the problem of war debt liquidation of approximately \$500,000,000,000 with the customary interest? A.A.C.

Technocracy has no intention of tackling the problem of war debt liquidation. That is a Price System problem; and Technocracy does not operate with Price System methods. The adoption of Total Conscription will make it impossible to add another dime to the national debt. Total Conscription provides that the Governments of the United States and Canada will assume title to all national corporate wealth and will conscript the physical facilities and operating personnel of the entire industrial system. Having done this, the Governments will then operate them by engineering methods, without taxes or profits. Had this been done at the beginning of the war, there would have been no war debt. No, my friend, Technocracy has no intention of pulling the Price System's chestnuts out of the fire. Let them burn their own fingers. However, we

can prevent the debt from going any higher by adopting Total Conscription at this time.

What is Technocracy's position with regard to conscription of labor alone? J.H.W.

Conscription of labor alone is a fascistic move. Conscription of capital alone is a communistic move. Total Conscription is the only alternative. It enrolls *all* citizens in National Service. It conscripts *all* men, *all* machines, *all* materiel, *all* money. It puts *all* citizens on the same basis as the Armed Forces. The guiding principle is 'National Service from All and Profits to None.' This is the antithesis of fascism.

Why are the fascists reactionary, but still go on making technological strides? H.W.D.

Fascism uses technology to the best of its ability to freeze the further advancement of technology. This is because the advancement of technology creates unsolvable social problems. As long as any economy is in a state of expansion, it is not compelled to solve its social problems. They can be glossed over. The pressure for social change inherent in every social problem is always relieved by the escape valve of new frontiers in agriculture, industry and geography.

From the birth of America until about 1910, one could always escape from his problems. If one couldn't

stand his lot in life at home, he could always go out West, and squat someplace, and let the country grow up around him. This was a favorite route to Easy Street in America for a long time. Then, again, one could always go into business for himself. It wasn't hard to do in an expanding economy. The melting pot of America boiled with multifarious social problems for over a hundred years. But it never boiled over, because the steam escaped faster than the heat of technological advancement applied underneath the pot.

Since our social system is organized to produce and exchange goods and services for a profit, a certain set of physical conditions is necessary for its continuance. First, there must always be a scarcity of goods and services; else there will be no profit. Second, there must always be enough man-hours of labor available in the system to provide purchasing power to buy goods and services and keep the wheels of industry turning. This boils down to one or the other of two types of Price System operations.

The first one which has existed all over the world for thousands of years is essentially a static state of society. It is composed of a set of physical conditions wherein there is a state of natural scarcity of goods and services. This is combined with a handicraft-agrarian human-toil hand-tool method of production and exchange. Social change is frozen at a low level.

The other type of Price System operations is one in which there is

a continuous state of expansion, agriculturally, industrially and geographically. The first type of Price System operations may go on indefinitely. It is balanced by both man-made and natural repressions. The second type, obviously, cannot go beyond a certain point. First, it soon reaches the limits imposed by natural forces. Second, the impact of technology, whose advent made the expansion possible, soon imposes restrictions also.

Technology reduces man-hours of labor and thus reduces purchasing power. The process is cumulative at both ends. The effect of this can be evaded for awhile by various devices. Among these are installment buying, Government spending, and war. The general trend once started feeds upon itself and grows greater. The heat of technological advancement underneath the social pot continues to mount in intensity. The natural escape valves of the Price System are wrecked. The devious devices that have substituted for them are becoming more and more unworkable. Ergo, the pressure for social change rises higher and higher.

There are only two Price System ways out of this dilemma. One is to find somehow a new and legitimate period of physical expansion. The other is to revert back to an earlier stage of development and freeze the social mechanism there. That essentially is what fascism is attempting to do.

Fascism is social reaction to escape from the problems brought on by the

advancement of technology, by killing off a sufficient number of the population so that a handicraft-agrarian system of human toil and hand tools will be adequate to support the survivors. It is a conspiracy by corporate enterprise, ecclesiasticism and the political state to resist social change. Naturally, it uses the most efficient tools at hand. That is why it employs technology.

Its object, however, is to imprison technology and thus control its social impact.

There is only one sure way to defeat fascism in America. That is by means of Technocracy's Program of Total Conscription. This will free technology from all Price System restrictions and give it full liberty of action to solve America's social problems for good and for all.

FLOWERS, FINANCES AND FLYING

An American flower grower, while on a prewar tour of gardens in Ireland, came upon a hybrid rose which had a peculiar tint, peculiar, that is, for a rose. Calling over the grower in charge, he asked him for the straggly little mistake, and the Irishman was glad to get rid of it. Carefully transplanted to a Newark, N. J., garden, the flower—the world's first gray rose—has flourished on this Continent. (Note to Technocrat floriculturists: The complete story of this gray rose can be found in *Collier's Magazine*, September 23, 1944.)

A General Electric Co. official was reminiscing about the late electrical wizard, Charles Steinmetz, who was the Edison of his day. . . . 'Steinmetz was worth a salary of \$1,000,000 per year to us,' explained the official, who then told what little regard the genius had for money. He was offered a contract, and refused to accept it. He was then offered a salary, and refused to accept that too. . . . 'I want

a simple financial arrangement,' said Steinmetz. 'Whenever I need money, give me permission to get what I want from the paymaster.' The arrangement was completed, and every ten days or two weeks, the electrical wizard would draw the munificent sum of \$50.00.—Extract from Kup's column in the *Chicago Daily Times*, August 21, 1944.

When the American and Australian forces were fighting in the New Guinea jungles a force of 5,000 soldiers was completely cut off from their supply base. The Japs didn't know it, however. The condition obtained for two weeks. During this time they were supplied by a single Douglas C-47 Skytrain. The ship made 57 trips during 12 days and hauled 257,300 pounds of supplies to the fighters. This is slightly more than 128 tons. Since 57 trips were made the average haul was a little better than 2¼ tons per trip. (From Douglas Airview, November, 1944). *Ed. Note:* When we read this, we couldn't help thinking about Technocracy's Flying Wing. This superbomber has a carrying capacity of 50 tons. According to our figuring, a single Flying Wing could have hauled more than 128 tons in three trips, instead of 57.

Each In His Own Tongue

Voice of the Price System

Did They Say That?

by Publications Division 8741-1

We may be thankful for the depression for no longer are people worrying about and striving to attain false financial standards as they did before the economic structure was upset.

Reverend Ormal Leroy Miller, in a sermon at the University Methodist Church in Madison, Wisconsin, Thanksgiving Day, 1932. (As reported in *The Progressive*, October 2, 1944.)

The depression has been a mighty fine thing for the boys and girls. It gave them the chance to do their own thinking and made them self reliant.

Edgar A. Guest, a few days after Thanksgiving Day, 1932. (As reported in *The Progressive*, Oct. 2, 1944.)

The University of Chicago recognizes that the main function of business enterprise is to produce and distribute goods and services for profit, and that patents play an important role in the effective operation of the business economy. The industrial application of inventions and discoveries is the task of industry—not the University.

(From the Patent Policy of the University of Chicago as outlined in a circular distributed by it.)

Free enterprise does not connote complete planning on a national level. It connotes a plan made by each individual or each business within the framework of free opportunity.

John M. Hancock, financier and co-author of the Government's Baruch-Hancock report on reconversion at the 1944 annual convention of the National Association of Manufacturers in New York City. (As reported in the *Chicago Tribune*, Dec. 7, 1944.)

—the private enterprise system is the best known means of bringing about effective world prosperity and employment, and of securing and maintaining world peace.

Excerpt from an addendum to the report of the International Business Conference, with delegates from 52 nations, which met at the Westchester Country Club at Rye, New York, last Fall. (As reported in the *Chicago Sun*, Nov. 17, 1944.)

We have so improved our manufacturing methods that fewer people will be needed to produce our population's prewar requirements. The answer is the production of new kinds of things.

Eric Johnston, president of the Cham-

ber of Commerce of the United States at the Chamber's marketing conference. (As reported in the *Chicago Sun*, Oct. 24, 1944.)

It is fortunate that the large companies exist so that the small operator can get a fair return on his business by selling it.

Eugene Holman, vice-president of the Standard Oil Company of New York, before the Chamber of Commerce of the State of New York. (As reported in *The Nation*, June 17, 1944.)

Let's teach Americans to want to be rich again. Let them compete for that honor . . . dog eat dog. It's the wealthy who will be the saviors of this country.

Fred Perkins, York, Pennsylvania, battery manufacturer. (As reported in the *Chicago Herald American*, Dec. 9, 1944.)

If women had run the affairs of the world for the past few thousand years, they could hardly have made a worse mess of them than the men have, . . . Woman's reproductive apparatus is so complicated that the rest of her has to be simple, and great

statesmanship calls for simplicity.

Ernest A. Hooten, professor of anthropology at Harvard University. (As reported in the *Chicago Sun*, Oct. 18, 1944.)

Any man elected to the office of county treasurer, sheriff, coroner, clerk of the court, or register of deeds (of Cook County) who cannot retire at the end of one term with \$500,000, is unfit to hold public office.

The late Robert Sweitzer, former Treasurer of Cook County, Illinois, in which Chicago is located. This eminent politico made this statement in all seriousness to a group of reporters. One of them present passed it on to this writer. Well, Mr. Sweitzer ought to know, he tried. He was indicted for misappropriation of some \$400,000 out of the County Treasury. He died before his trial came up.

This business of teaching every child indiscriminately how to read and write results in nothing more than mass illiteracy.

(From the Jesuit Magazine *America*, Oct. 31, 1931.)

Voice of Technology

They Did Say That

By Publications Division 8741-1

The youngster who rises in the school room and says, "Teacher you are wrong," is our most valuable citizen.

Watson Davis, director of Science

Service, before 2,000 mathematics and science teachers at the Stevens Hotel, Chicago. (As reported in the *Chicago Daily News*, Nov. 24, 1944.)

He that invents a machine aug-

ments the power of a man and the well-being of mankind.

Henry Ward Beecher, American clergyman, lecturer and editor (1813-1877).

There is no free will in the human mind; it is moved to this or that volition by some cause, and that cause has been determined by some other cause, and so on infinitely.

Baruch Spinoza (1632-1677), outcast Jewish philosopher, grinder of optical lenses and author of a book placed on the Index Expurgatorius. (As quoted in Dale Harrison's column 'All About the Town' in the *Chicago Sun*, Nov. 24, 1944.)

Using the equation that one kilowatt-hour of electricity is equal to ten man-hours of labor, war-time America has the services of about 800,000,000 invisible men, subject to direct orders. . . . This compares with 150,000,000 invisible men available in World War No. 1.

C. B. Huntress, vice-president of Republic Coal and Coke Company, on December 3, 1943. (As quoted in *Coal Age*, January, 1944.)

I sometimes wonder if our democracy in its present form is equipped to face the problem of technology.

The late Henry T. Rainey, Speaker of the House of Representatives from 1933 to 1936. (As quoted in Emilie Gavreau's new book *The Wild Blue Yonder*, devoted to the story of how the Price System interfered with and

delayed the rise of American air power.)

The human race never retraces its steps, it can move in only one direction—forward. But it may do this in a downward as well as in an upward direction. It is up to us to choose the right course.

The late Hendrik Willem Van Loon, newspaperman, author and historian.

The highest purpose of scientific achievement is more abundant life for man. To discover a truth, to invent a machine or method, may be gratifying and valuable but the greatest achievement comes in putting the truth, the machine, the method to use for mankind.

Sir Richard Gregory, former editor of *Nature*, when he was in the U. S. A. in 1938.

At the turn of the century, civilization was about at the point where it could leave the old era of scarcity and embark on one of potential abundance, made possible by science and its applications. World War II will have demonstrated completely the fact that man can overproduce all his material needs, including food, clothing, shelter and everything else of a material nature which he requires, even to luxuries we cannot even visualize now.

Frank C. Whitmore, Dean of the Pennsylvania State College of Chemistry and Physics, in an article in the *Louisville Times*, Nov. 15, 1944.

WHO'S SPOOFING WHO?

'An American Youth orchestra to be conducted by Dean Dixon, now is being organized. The conductor is trying to select the orchestra members in true democratic fashion . . . During the auditions, Dixon sits behind a screen so that he is unable to see the musician who is playing. In this way, the conductor explains, by democratic process, his orchestra members are selected not on the basis of race, creed, color or sex, but only by their ability as musicians.' (Leonard Lyons, in his column in the *St. Louis Globe-Democrat*, July 18, 1944).

Editor's Note: The above is a correct example of the *functional* selection of ability. *Functional* selection by ability would be the method used in a scientifically controlled society.

NOTICE

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SONNET TO EARTH

'But if they be wise to measure the star
beneath their feet,
Intense with the tissue of power and woven
with waiting heat,
There are starry uses of stars. Let them
love their planet and see
How it longeth to bear the burden and let
the slave go free.
They shall loose the lightning gently, the
granite shall bloom with grain,
And under the rainbow's glory young Eden
shall come again.'

—from a poem by Edwin C. Lewis, in
University of Chicago Poems, published by
U. of C. Press 1923.

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WHAT?

★ Technocracy is the only North American social movement with a North American program which has become widespread on this continent. It has no affiliation with any other organization, group or association either in North America or elsewhere.

★ The basic unit of Technocracy is the chartered Section consisting of a minimum of 25 members and running up to several hundred.

★ It is not a commercial organization or a political party; it has no financial subsidy or endowment and has no debts. Technocracy is supported entirely by the dues and donations of its own members. The widespread membership activities of Technocracy are performed voluntarily; no royalties, commissions or bonuses are paid, and only a small full-time staff receives subsistence allowances. The annual dues are \$6.00 which are paid by the member to his local Section.

★ Members wear the chromium and vermillion insignia of Technocracy—the Monad, an ancient generic symbol signifying balance.

WHERE?

★ There are units and members of Technocracy in almost every State in the U. S. and in all Provinces in Canada, and in addition there are members in Alaska, Hawaii, Panama, Puerto Rico and in numerous other places with the Armed Forces.

★ Members of Technocracy are glad to travel many miles to discuss Technocracy's Victory Program with any interested people and Continental Headquarters will be pleased to inform anyone of the location of the nearest Technocracy unit.

WHEN?

★ Technocracy originated in the winter of 1918-1919 when Howard Scott formed a group of scientists, engineers and economists that became known in 1920 as the Technical Alliance—a research organization. In 1933 it was incorporated under the laws of the State of New York as a non-profit, non-political, non-sectarian membership organization. In 1934, Howard Scott, Director-in-Chief, made his first Continental lecture tour which laid the foundations of the present nation-wide membership organization. Since 1934 Technocracy has grown steadily without any spectacular spurts, revivals, collapses or rebirths. This is in spite of the fact that the press has generally 'held the lid' on Technocracy, until early in 1942 when it made the tremendous 'discovery' that Technocracy had been reborn suddenly full-fledged with all its members, headquarters, etc., in full swing!

WHO?

★ Technocracy was built in North America by North Americans. It is composed of North American citizens of all walks of life, Technocracy's membership is a composite of all the occupations, economic levels, races and religions which make up this continent. Membership is open only to North American citizens. Aliens, Asiatics and politicians are not eligible. (By politicians is meant those holding elective political office or active office in any political party.)

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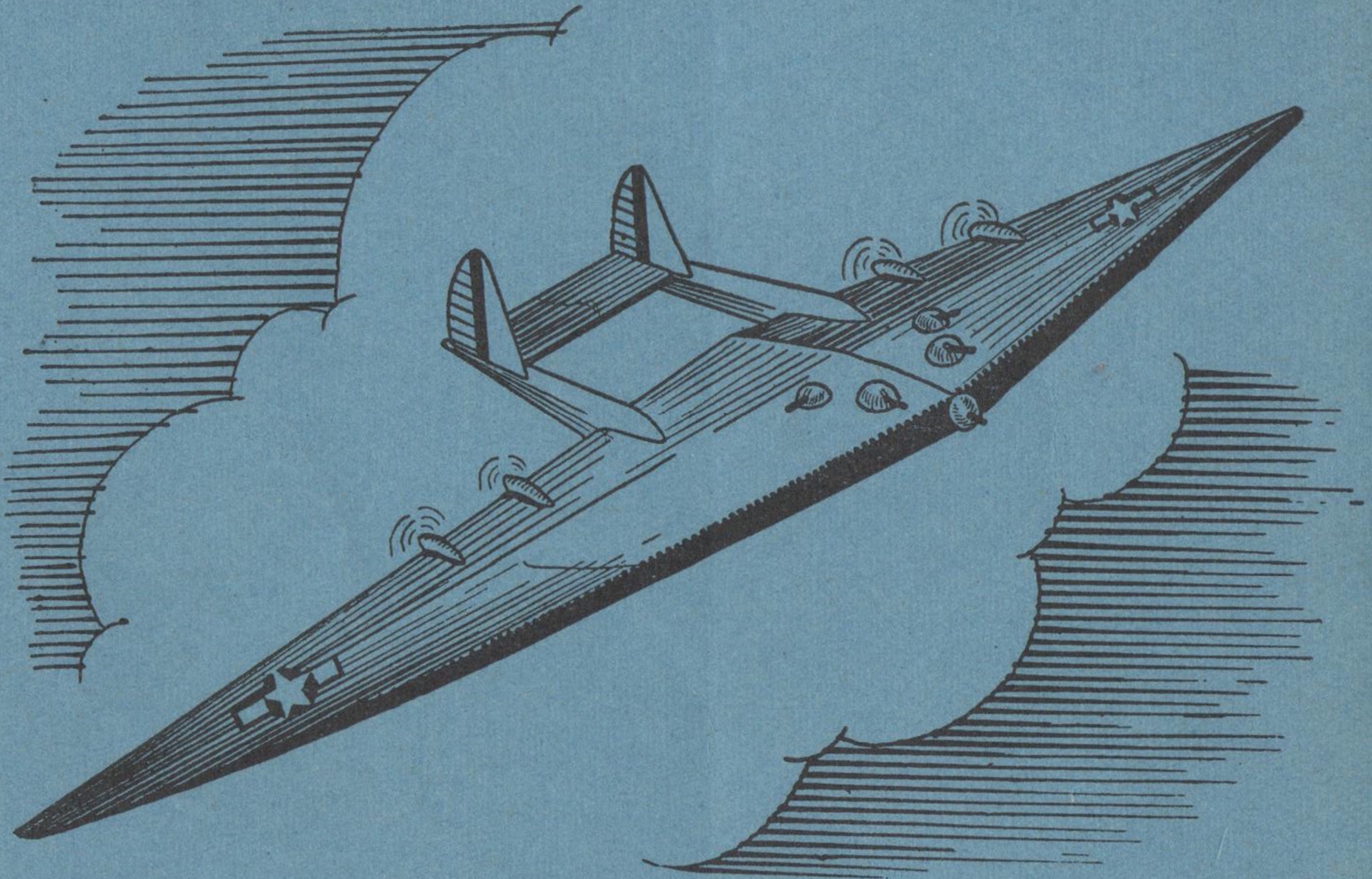
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